Lyng in Tofilal

THE
Medical
AND
CHIRURGICAL REVIEW;

CONTAINING

A COPIOUS ACCOUNT

OF

VARIOUS PUBLICATIONS

In different Languages,

ON

MEDICINE AND SURGERY:

TOGETHER

With a Variety of Miscellaneous Information

RELATING TO

The different Branches of Medicine,

AND

THE SCIENCES CONNECTED THEREWITH.

---------------QUÆ NON FECIMUS IPSI
VIX EA NOSTRA VOCO. ----------- *Ovid.*

VOL. VIII.

LONDON:

PRINTED FOR THE EDITORS,

AND SOLD BY T. BOOSEY, NO. 4, OLD BROAD STREET;
W. MUDIE, EDINBURGH; W. GILBERT, DUBLIN;
and all other booksellers.

Knight and Compton, Printers, Middle Street,
Cloth Fair.

PREFACE.

AT the period of the commencement of the MEDICAL AND CHIRURGICAL REVIEW, there exifted no periodical Journal in this country for the diffufion of medical knowledge, or that might ferve the purpofe of general communication among the different members of the faculty. Practitioners were, in a great meafure, infulated one from another, and had no means of becoming acquainted with the different improvements that took place in the various branches of the *art of healing*, but through the medium of publications, often difficult, and always expenfive, to procure. Hence difcoveries, calculated to forward the progrefs of medical fcience, made their way flowly, and in many inftances, no doubt, perifhed with their authors. How much fcience was likely to fuffer from this caufe, it is unneceffary to point out. Abroad, indeed, the advantages of periodical journals on medical fubjects were felt and enjoyed; but they rarely found their way to this country, and were acceffible to very few.

Under fuch circumftances, there was no reafon to doubt that a periodical work profeffing to furnifh a compendious account of what was paffing worthy notice in different parts of the world would be as favourably received as it was unqueftionably wanted. On thefe grounds was undertaken the MEDICAL AND CHIRURGICAL REVIEW, and on thefe principles has it been fince continued.

Various circumftances, however, confpired, at firft, to render it lefs extenfively ufeful, and more confined in its objects, than the Editors wifhed; of thefe the chief were, the unhappy ftate of politics, and the almoft wholly-interrupted communication with foreign parts: hence their account of foreign literature was neceffarily lame and defective. Of late, a better order of things has prevailed, and the freedom of literary intercourfe is in a great meafure reftored. Of this happy turn we have not failed to profit: our foreign articles have become numerous and important, and have added materially, if we may rely on the teftimony of our correfpondents, to the utility of the undertaking.

To controverfy, from the firft, we declared ourfelves averfe, and therefore indulged but fparingly in the difplay of critical talents; preferring rather to place our readers in a fituation of judging for themfelves. We declined, likewife, making our work a vehicle for individual cafes and correfpondence; not becaufe we conceive fuch a department ufelefs (provided an ample difcretion be ufed of excluding crude and ill-afcertained facts, and all perfonal and petulant allufion), but becaufe it would trench too far on the limits we had affigned ourfelves, and which we could fully occupy on the plan originally propofed. This province, however, we are glad to fee ably fupplied by a cotemporary Journal.

The prefent volume differs from the preceding ones in regard to its price; but the advance had become indifpenfible, and, we are willing to flatter ourfelves, has been compenfated, by the additional quantity and variety it has enabled us to furnifh. In the whole will be found, what cannot be elfewhere met with, an ample account of every improvement and tranfaction of importance, that have taken place in the medical world for the laft ten years.

CONTENTS.

CONTENTS.

THE

No. XLIII.

THE

MEDICAL AND CHIRURGICAL REVIEW.

JUNE, 1801.

ART. I. *Philosophical Transactions of the Royal Society of London, for the Year* 1800. Part III. 300 pages, price 17s. London. ELMSLEY.

IN a former number of our Review*, we gave a detailed account of the very interesting paper of Dr. *Herschell* on the Nature and Properties of Light and Heat. It was there shewn, that heat derived immediately from the sun, or from candent terrestrial substances, is occasioned by rays emanating from them; and that such heat-making rays are subject to the laws of reflection and refraction. In this respect the similarity between light and heat was shewn to be very great. The object of the author now is, to point out some striking and essential differences between the two, and which will serve to influence the determination of the question, whether light and heat be occasioned by the same or by different rays.

The first experiments of the author were intended to prove the different refrangibility of the rays of heat.

* Vol. VII. p. 302, et seq.

This,

This, indeed, might have been inferred from the preceding part of the inquiry; ſince rays that have been ſeparated by the priſm, and have ſtill remained ſubject to the laws of reflection and refraction, as was ſhewn, could not be otherwiſe than of different refrangibility. Dr. *Herſchell* next proceeds to point out a very material difference, which is, that the rays of heat are of a much more extenſive refrangibility than thoſe of light. His experiments prove, likewiſe, that the ſines of refraction of the heat-making rays are in a conſtant ratio to the ſines of incidence; and that the different refrangibility of heat, as well as that of light, admits of priſmatic correction.

It appears from experiment, that, in burning glaſſes, the focus of the rays of heat is different from the focus of the rays of light. 'I placed my burning lens,' the author obſerves, 'with its aperture reduced to three inches, in order to leſſen the aberration ariſing from the ſpherical figure in the united rays of the ſun; and being now appriſed of the different refrangibility of the rays of heat, and knowing alſo that the leaſt refrangible of them are the moſt efficacious, I examined the focus of light by throwing hair-powder, with a puff, into the air. This pointed out the mean focus of the illuminating rays, ſituated in that part of the pencil which opticians have ſhewn to be the ſmalleſt ſpace into which they can be collected. That this may be called the focus of light, our experiments, which have proved the maximum of illumination to be ſituated between the yellow and green, and therefore among the mean refrangible rays of light, have fully eſtabliſhed. The mean focus being thus pointed out by the reflection of light on the particles of powder, I held a ſtick of ſealing wax 1″,6, or four beats of my chronometer, in the contracted pencil, half an inch nearer to the lens than the focus. In this time no impreſſion was made on the wax. I applied it now half an inch farther from the lens than that

that focus; and in 8-tenths of a ſecond, or two beats of the ſame chronometer, it was conſiderably ſcorched. Expoſing the ſealing wax alſo to the focus of light, the effect was equally ſtrong in the ſame time; from which we may ſafely conclude, notwithſtanding the little accuracy that can be expected, for want of a more proper apparatus, from ſo coarſe an experiment, that the focus of heat, in this caſe, was certainly farther removed from the lens than the focus of light, and probably not leſs than one quarter of an inch; the heat at half an inch beyond the focus of light being ſtill equal to that in the focus.'

The author's attention was next directed to the tranſmiſſion of ſolar heat through colourleſs ſubſtances. Two ſimilar thermometers were expoſed to the ſun's rays, a piece of clear tranſparent glaſs, with a bluiſh-white caſt, being interpoſed before one of the thermometers, the other being expoſed to the ſun's direct rays in an uncovered ſtate. It was found that the ſun communicated, in 5 minutes, 6 degrees of heat to that which was openly expoſed to its action; while, in the ſame time, the other received only $4\frac{1}{2}$ degrees by rays tranſmitted through the bluiſh-white glaſs. This ſhews plainly, that only $\frac{3}{4}$ of the incident heat were tranſmitted, and therefore that $\frac{1}{4}$ of it was intercepted by the glaſs. A conſiderable difference was found with regard to heat and light in this reſpect, the quantities of each tranſmitted being altogether unequal. This will beſt appear from the following table, which gives a comparative view of the ſubject. To render this more clear, we may ſuppoſe always 1000 rays of heat or of light to come from the object: then 750, or $\frac{3}{4}$th, being tranſmitted, as mentioned above, it follows, that the remaining 250, or $\frac{1}{4}$, are ſtopped by the bluiſh-white glaſs uſed in the experiment.

TABLE I.

Of 1000 fuppofed rays,	Of Heat.	Light
Bluifh-white glafs ftops	250	86
Flint glafs	91	34
Highly polifhed crown glafs, of a greenifh colour	259	203
Coach glafs	214	168
Iceland cryftal of nearly $\frac{2}{10}$ of an inch in thicknefs	244	150
Talc	139	90
Ditto eafily calcinable	184	288

When the tranfmiffion of heat and light through glaffes of the prifmatic colours was tried, the refult was as follows:

TABLE II.

	Heat.	Light.
Very dark red glafs ftops	800	$999\frac{9}{10}$
Dark red glafs	606	$999\frac{8}{10}$
Orange glafs	604	779
Yellow glafs	333	319
Pale-green glafs	633	535
Dark-green glafs	849	949
Bluifh-green glafs	768	769
Pale-blue glafs	812	684
Dark-blue glafs	362	801
Indigo glafs	633	$999\frac{7}{10}$
Pale-indigo glafs	532	978
Purple glafs	583	993
Violet glafs	489	955

The tranfmiffion of folar heat and light through liquids was next examined. For this purpofe glafs tubes were employed, about three inches in diameter.

TABLE

TABLE III.

	Rays of Heat.	Of Light.
These tubes merely containing air stops	542	204
The same filled with well-water	558	211
——— sea-water	682	288
——— spirit of wine	612	224
——— gin	739	626
——— brandy	794	996

When scattering substances were employed, such as glass rendered rough by being ground with emery, the transmission of heat and light were found to be unequal as before.

TABLE IV.

	Rays of Heat.	Of Light.
Rough crown glass stops	464	854
Rough coach glass	571	879
The first doubly rough	667	932
The second doubly rough	735	946
The two first together	698	969
The two next together	800	979
The four first together	854	995
Olive colour, burnt in	839	984
Calcined talc	867	996
White paper	850	994
White linen	916	952
White persian	760	916
Black muslin	714	737

The transmission of terrestrial flame-heat through various substances was next investigated: for this purpose the flame of a wax-candle was employed. The result appears in the following—

TABLE V.

	Rays of Flame-heat.	Candle-light.
Bluish-white glass stops	625	86
Flint glass	591	as before
Crown glass	636	——
Coach glass	458	——
Iceland crystal	516	——
Calcinable talc	375	——
Very dark red glass	636	——

 Dark

	Rays of Flame-heat.	Candle-light.
Dark red glaſs	526	86
Orange glaſs	560	as before
Yellow glaſs	583	——
Pale-green glaſs	500	——
Dark-green glaſs	739	——
Bluiſh-green glaſs	652	——
Pale-blue glaſs	609	——
Dark-blue glaſs	619	——
Indigo glaſs	679	——
Pale-indigo glaſs	571	——
Purple glaſs	520	——
Violet glaſs	500	——
Rough crown glaſs	741	——
Rough coach glaſs	667	——
The firſt doubly rough	615	——
The ſecond doubly rough	680	——
The two firſt together	720	——
The two next together	667	——
The four firſt together	870	——
Olive colour, burnt in	792	——
White paper	729	——
Linen	690	——
White Perſian	593	——
Black muſlin	565	——

The following table ſhews the comparative ſtoppage of priſmatic heat of the refrangibility of the red rays, and of the inviſible rays.

TABLE VI.

	Red Rays.	Inviſ. Rays.
Bluiſh-white glaſs ſtops	375	71
Flint glaſs	143	000
Crown glaſs	294	182
Coach glaſs	200	143
Iceland cryſtal	200	——
Calcinabie talc	133	250
Dark red glaſs	692	000
Orange	500	273
Yellow	417	200

Pale

	Red Rays.	Inviſ. Rays.
Pale green	588	375
Dark green	786	500
Bluiſh green	462	800
Pale blue	700	750
Dark blue	71	167
Indigo	362	222
Pale indigo	313	250
Purple	444	273
Violet	400	250
Crown glaſs, one ſide rough	389	600
Coach glaſs, ditto	500	500
Crown glaſs, both ſides rough	471	600
Coach glaſs, ditto	833	714
Calcined Talc	737	889

A great number of other experiments were made for inveſtigating the tranſmiſſion of fire-heat, of the inviſible rays of ſolar heat, and of inviſible terreſtrial heat through various ſubſtances; but our limits forbid us to be more particular. We come, therefore, to the main object of the inquiry, viz. Whether light and heat be occaſioned by the ſame, or by different rays?---' Before we enter into a diſcuſſion of this queſtion,' the author obſerves, ' it appears to me that we are authoriſed, by the experiments which have been delivered in this paper, to make certain concluſions, that will entirely alter the form of our inquiry. Thus, from the eighteenth experiment, it appears, that 21 degrees of ſolar heat were given in one minute to a thermometer, by rays which had no power of illuminating objects, and which could not be rendered viſible, notwithſtanding they were brought together in the focus of a burning lens. The ſame has, alſo, been proved of terreſtrial heat, in the ninth experiment; where, in one minute, 39 degrees of it were given to a thermometer, by rays totally inviſible, even when condenſed by a concave mirror. Hence it

it is established, by incontrovertible facts, that there are rays of heat, both solar and terrestrial, not endowed with a power of rendering objects visible.

'It has, also, been proved, by the whole tenor of our prismatic experiments, that this invisible heat is continued, from the beginning of the least refrangible rays towards the most refrangible ones, in a series of uninterrupted gradation, from a gentle beginning to a certain maximum; and that it afterwards declines, as uniformly, to a vanishing state. These phenomena have been ascertained by an instrument, which, figuratively speaking, we may call blind, and which, therefore, could give us no information about light; yet, by its faithful report, the thermometer, which is the instrument alluded to, can leave no doubt about the existence of the different degrees of heat in the prismatic spectrum.

'This consideration, as has been observed, must alter the form of our proposed inquiry; for the question being thus, at least partly, decided, since it is ascertained that we have rays of heat which give no light, it can only become a subject of inquiry, whether some of these heat-making rays may not have a power of rendering objects visible, superadded to their now already established power of heating bodies.

'This being the case, it is evident that the *onus probandi* ought to lie with those who are willing to establish such an hypothesis; for it does not appear that Nature is in the habit of using one and the same mechanism with any two of our senses: witness the vibrations of air that make sound; the effluvia that occasion smells; the particles that produce taste; the resistance or repulsive powers that affect the touch; all these are evidently suited to their respective organs of sense. Are we then here, on the contrary, to suppose that the same mechanism should be the cause of such different sensations, as the delicate perceptions of vision, and the very grossest of all affections which

are

are common to the coarſeſt parts of our bodies, when expoſed to heat?'

The author then proceeds to examine the different experiments, with regard to their influence in determining the queſtion of the ſameneſs or difference of the rays of light and heat. 'By caſting an eye on the firſt table,' he obſerves, 'it will be ſeen immediately that no kind of regularity takes place among the proportions of rays of one ſort and of another, which are ſtopped in their paſſage. Heat and light ſeem to be entirely unconnected. The bluiſh white and flint glaſſes, for inſtance, ſtop nearly three times as much heat as light; whereas the greeniſh crown glaſs ſtops only about one-fourth more of the former than of the latter.'

With regard to the ſecond table, it appears that yellow glaſs ſtops only 333 rays of heat, but ſtops 819 of light; on the contrary, a pale blue ſtops 812 rays of heat, and but 684 of light. Again, a dark blue glaſs ſtops only 362 rays of heat, but intercepts 801 of light; and a dark red glaſs ſtops no more than 606 rays of heat, and yet intercepts nearly all the light, ſcarcely one ray out of 5000 being able to make its way through it.

As it appears, therefore, that ſtopping one ſort of rays does not neceſſarily bring on a ſtoppage of the other ſort, and that heat and light are, in this reſpect, independent of each other, it will follow that they muſt be occaſioned by different rays. The objections which may be ſtarted to this concluſion are examined, and, in our opinion, fully obviated by the learned author. With regard to red rays, as occaſioning heat, it may be ſaid that the heat is occaſioned by the light of thoſe rays; but it is ſhewn, that red glaſs does not ſtop red rays: indeed the appearance of objects ſeen through ſuch coloured glaſſes, is a ſufficient proof that they tranſmit red light in abundance. But with regard to the rays of heat, the caſe is juſt the reverſe: for

for the red glaſs ſtops no leſs than 692, out of a thouſand, of ſuch rays as are of the refrangibility of red light.

Another argument is adduced, that heat and light are occaſioned by different rays, which is this: that the ſtoppage of ſolar heat was conſtantly greater, in the experiments here detailed, in the firſt, ſecond, or third minute, than in the fourth or fifth; or, more accurately, nearer the beginning of the five minutes than about the end of them. Now this does not happen in the tranſmiſſion of light, which, as far as we know, is inſtantaneous. This ſeems to ſuggeſt that the law by which heat is tranſmitted, is different from that which directs the paſſage of light, and becomes an irrefragable argument of the difference of the rays which occaſion them.

In the ſcattered tranſmiſſions ariſing from rough ſurfaces, we find, that when crown glaſs, for inſtance, has one of its ſides rubbed on emery, it will ſtop 205 rays of heat more than while that ſurface remains poliſhed; but the effect of the roughneſs produced by emery ſcratches, is far more conſiderable on the rays of light; the additional ſtoppage of them amounting to no leſs than 651. A confirmation of the ſame effect we have in coach glaſs; which, having alſo one ſide rubbed on emery, ſtops only 357 rays of heat more than it did before; while there is an additional ſtoppage of rays of light amounting to no leſs than 717. Now, ſince the interior conſtruction of theſe glaſſes, before and after having been rubbed on emery, remains the ſame, theſe remarkable effects can only be aſcribed to the roughneſs of their ſurfaces. Hence we may conclude, that as the ſame cauſe, when it acts upon the rays of heat and light, produces effects ſo very different, it can only be accounted for by admitting the rays themſelves to be of a different nature, and therefore ſubject to a different law in being ſcattered.

Other arguments, in ſupport of the difference between the rays of heat and thoſe of light, are brought from

from the emiſſion of inviſible heat from the flame of a candle, as before proved by the thermometer, and likewiſe from the laws which govern the tranſmiſſion and ſcattering of terreſtrial light and heat; but theſe we are obliged to paſs over.

On a future occaſion, the ingenious author promiſes to point out the application of his diſcoveries on this important ſubject to the uſeful purpoſes of life.

The only remaining paper in the preſent volume of Tranſactions, is, 'An Account of a Trigonometrical Survey, carried on in the Years 1797, 1798, and 1799. By Captain William Mudge, of the Royal Artillery.'

ART. II. *Annals of Medicine, for the Year* 1800. *Exhibiting a conciſe View of the lateſt and moſt important Diſcoveries in Medicine, and Medical Philoſophy. By* A. DUNCAN, *Sen. M.D. and* A. DUNCAN, *Jun. M.D. &c.* 8vo. 567 pages, price 8s. Edinburgh, 1801. ROBINSONS, London.

THE general plan of the work before us is ſo well known to medical readers of all deſcriptions, that it is ſufficient for us to remark, that, in the variety and importance of its contents, the preſent volume is in no reſpect inferior to thoſe which have preceded it. This will appear from the analyſis we are now about to give.

The firſt ſection contains, as uſual, an account of ſeveral of the moſt intereſting publications, both domeſtic and foreign, on different branches of medicine, which have made their appearance in the courſe of the paſt year: of theſe, ſome will be found new to the generality of Britiſh practitioners, and will, for that reaſon, demand our notice. The works of

of which we have already given an account, are, *Smyth* on the deſtruction of contagion; *Anderſon* on the yellow fever; *Parry* on Syncope Anginoſa; *Haygarth* on fictitious tractors; *Ferriar* on the fox-glove; *Aikin* on cow-pox; *Davy* on nitrous oxyd.

Art. 6. 'Method of extracting the cataract along with the capſule; to which are added ſome important improvements of the operations for the cataract in general; by Dr. *Joſeph Beer*, of *Vienna.*' The author thinks, that one of the chief imperfections in the extraction of the cataract, as at preſent practiſed, is, that the capſule is almoſt always left behind in the eye; for it often happens that ſome mucus, or ſmall fragment of the cataract, adhering to the edges of this capſule, eſcape the obſervation of the moſt experienced and careful operator; and, after the operation, fall within the pupil, diminiſhing thus in part the ſucceſs of the operation, or rendering repeated, ſometimes painful and uncertain, ſteps neceſſary. The capſule itſelf often becomes opaque after the operation; and, according to the preſent practice, the operator is obliged either to extract it with a pair of forceps, or to deſtroy it with a cutting inſtrument; and often with much injurious irritation to the organ. Dr. *Beer*, therefore, in all caſes, endeavours to extract the capſule of the cryſtalline along with the lens itſelf, which he effects by an angular ſpear-headed needle: with this, he obſerves, he is able to extract every hard, and the greater number of half-ſoft cataracts, with great eaſe and certainty. He deſcribes his preſent method of operating as follows:

As ſoon as he has opened the cornea, and dilated the pupil as much as poſſible, by gentle preſſure with the finger, he raiſes the flap of the cornea with the neck of the needle, the point being towards the noſe, and by drawing the needle gently back, and turning it, he brings it into the centre of the pupil, with the one ſurface turned upwards, and the other downwards. He now ſtrikes the needle ſo deep into the lens,

lens, that he can ſcarcely ſee any of the head ; and, as the inſtrument has a pretty thick body, the lens is at the ſame time preſſed ſomewhat backwards, and its weak anterior connexions deſtroyed. He then moves the needle repeatedly upwards and downwards, in order to deſtroy the upper and lower adheſions of the lens ; and, laſtly, turns the needle ſuddenly round on its axis, moves it repeatedly from the external and internal angle of the eye, and draws it directly through the pupil. Frequently the lens, with its capſule, immediately follows the needle, or it is eaſily preſſed out with the fingers. To prevent the capſule being rubbed off in the paſſage of the cataract through the pupil or the cornea, the wound in the latter ſhould be made as large as poſſible, even to the extent of two thirds of its circumference.

When the cataract is known to be perfectly ſoft and fluid, the author uſes a common eye-hook, endeavouring to ſeize the lens by its upper edge, and to roll it round towards the outſide. When the capſule is very thin and tender, the hook tears itſelf out. In this caſe, the capſule muſt be cut to pieces with a pair of crooked ſciſſars, or the ſpear-pointed needle, and extracted in fragments.

Art. 7. 'Practical Obſervations on the After-cataract, by Dr. *Beer*, of *Vienna.*' This paper is extracted from a Medical and Surgical Journal, publiſhed at *Saltzburgh*, in the year 1799, by Dr. *J. J. Hartenkeil.* The author obſerves, that he has been able to diſtinguiſh ſeven ſpecies of after-cataract, each of which has its peculiar ſymptoms, and requires a diſtinct method of treatment. The firſt ſpecies depends on portions of the capſule of the lens remaining in the eye, after the operation, and becoming opaque. This may be prevented by extracting the capſule along with the lens, in the manner before mentioned. The ſecond ſpecies is owing to portions of the ſoft and pulpy cataract remaining behind in the aqueous humour ; theſe, in general, gradually

gradually diſſolve, or ſubſide below the axis of viſion. The third ſpecies is owing to the effuſion of coagulable lymph on the vitreous capſule, in conſequence of inflammation: it is with difficulty relievable by art. The fourth ſpecies ariſes from the capſule becoming opaque long ſubſequent to the operation, and requires to be treated as the firſt ſpecies. The fifth ſpecies is owing to the opacity of the concave part of the vitreous capſule; its treatment reſembles that of the laſt. The ſixth depends on the emptied vitreous capſule protruding into the pupil, and diminiſhing viſion; in this caſe little or no relief can be given. The ſeventh ſpecies the author terms, the ſanguineous after-cataract, owing to the effuſion of red blood in the aqueous fluid: this, in general, diſappears ſpontaneouſly.

Art. 9. 'Precurſory Publication of a new and certain Method of curing Tetanus from Gunſhot Wounds, confirmed by two remarkable Caſes; with Remarks. By Dr. *Wenzel Aloys Stutz.*' Extracted from the ſame journal as the preceding. The treatment, on which ſo much ſtreſs is here laid, conſiſts in the alternate exhibition of opium and alkalies, on the principle ſuggeſted by Humboldt, in his Galvanic Reports, viz. that alkalies increaſe the excitability of irritable parts. Accordingly, the patient, in the caſes recited by Dr. *Stutz*, was placed in a ſemi-cupium of a ley of wood aſhes, in which two ounces of cauſtic potaſh were diſſolved. The mild vegetable alkali was, at the ſame time, exhibited internally, in doſes of ten grains every two hours. The rigid body, the author obſerves, was hardly put into the bath, till he evinced life and motion, the ſpaſms evidently abating. The ſymptoms recurred on coming out of the bath, though in a ſlighter degree; and were, by frequent repetitions of the ſame remedies, at length completely got the better of. The caſes here recited, in our opinion, are far from proving the efficacy of the alkaline treatment, eſpecially as very large doſes of opium were at the ſame time employed.

Art.

Art. 13. ‘ De Paralyſi Muſculorum Faciei Rheumatica ; auctore *Nic. Friedreich*, Prof. Wirecburg.’ From *Journal der Erfindungen* ; Gotha, 1798. Three caſes are here given where the paralytic affection was confined to the muſcles of one ſide of the face ; and which ſeem to prove, contrary to the general opinion of practitioners, that paralyſis of the muſcles of the face is not always apoplectic, but may ariſe from a topical and rheumatic cauſe. How far this opinion is juſtified by the caſes related, we ſhall put it in the power of our readers to judge, by tranſcribing them.

Caſe 1. ‘ A man, of forty-ſix years, ſubject to frequent catarrhs and rheumatiſms, was confined ſome weeks to bed, on account of a ſurgical operation. The firſt time that he left his room, he expoſed his left ſide to a ſtream of cold air from a window. In the evening, he was affected with ſhivering, heat, thirſt, and head-ache. In the morning, after a very reſtleſs night, a very painful ſwelling, of the ſize of a hazel-nut, appeared in the neighbourhood of the left maſtoid proceſs, exactly where the auditory nerve paſſes out of the ſkull. The malady was recogniſed to be rheumatic. Diaphoretics were ordered, and, under their employment, the pain and ſwelling abated daily. But on viſiting the patient, on the morning of the fifth day, our author found the muſcles of the left ſide of the face paralyzed, and the mouth and noſe drawn towards the right ſide. His fears were, however, ſoon diſſipated, as, on conſidering the preceding occaſional cauſes, the previous ſwelling and pain in the region of the maſtoid proceſs, and the integrity of all the ſenſes, and of all the other muſcles of the body, he could not view the evil as apoplectic, but as being local, and proceeding from the rheumatiſm affecting the place. Antimonials, aconite, infuſion of guaiacum, &c., as being ſerviceable in rheumatiſm, were preſcribed ; a bliſter applied to the neck, and various ſtimulating and diſcutient ointments rubbed in behind the left ear. Theſe remedies were perſiſted in for

ſeven

ſeven weeks, without any amendment, and, therefore, Profeſſor Friedreich determined to try electricity, the good effects of which, in obſtinate rheumatiſm, cannot be denied. He at firſt employed weak and few electric ſhocks, but gradually ſtronger and more numerous, twice a-day, and directed them variouſly through the left ſide of the face, from that place where the nerve comes through the ſtylomaſtoid foramen. During the firſt days, the muſcles remained immovable, but gradually they began to tremble, and to be convulſed at the application of the ſhocks, which are favourable ſigns. At laſt, their voluntary action returned by degrees; and, after the electricity had been uſed a month, volition had regained its full energy, and the face its natural appearance.'

Caſe 2. 'Profeſſor Friedreich has alſo ſeen this diſeaſe connected in the beginning with acute ſymptoms. A man, ſixty-four years of age, who had, during the winter and ſpring, ſuffered from various rheumatic complaints, expoſed himſelf, the following ſummer, in the garden to a cold air. He was, thereupon, ſeized with ſhivering febrile heat, and ſenſe of fatigue. He paſſed the night with great reſtleſſneſs, thirſt, and pains in his neck, ſhoulders, but eſpecially in the left ſide of his face. Theſe pains were moſt violent behind the ear, and darted towards the temples, the zygomatic proceſs, cheek, and orbit. The whole left half of the face was very red and warm, and all the muſcles of that ſide paralytic, ſo that the noſe and mouth were drawn awry by thoſe of the right ſide, and the patient could not move his eyebrows, or ſhut his eyelids, or chew with that ſide. The pulſe was very quick and hard. To leſſen the violence of theſe ſymptoms, a vein was opened, leeches applied behind the ear, and to the left temple; and the warm pediluvium, clyſters, gentle purgatives, and antiphlogiſtic remedies employed. As the violence of the fever abated in about forty-eight hours, diaphoretics were ordered, and bliſters applied to the neck and

behind

behind the left ear. By this treatment, in ſeven days, the fever, pain, redneſs, and heat of the left ſide of the face had entirely diſappeared, but the paralyſis continued. Profeſſor Friedreich did not now waſte time in trying internal and external medicines, but had immediate recourſe to electricity, which had been of ſo much ſervice in the firſt caſe, and he applied it in the ſame manner In this caſe, too, the muſcles were at firſt inſenſible to the electric ſtimulus, and did not begin to be convulſed till after ſome days. The uſe of the electricity was continued for three weeks, the diſeaſe diminiſhed daily, and the muſcles regained their power.'

Caſe 3. 'A countryman, of fifty years of age, applied to Profeſſor Friedreich, on account of paralyſis of the muſcles of the right ſide of the face. He ſaid, that, ten months before, he had been completely wet through with rain, after being much heated with work in the field; that he went home, took ſome rob ſambuci, and went to bed; that he paſſed the next night without ſleep, with heat, thirſt, and violent pains, affecting ſometimes one place and ſometimes another, but eſpecially the neck and right temple; that, on riſing, he was ſhocked with the deformity of his face, which had ſince continued the ſame; that different medical practitioners had conſidered his complaint as apoplectic, and had preſcribed bleeding, emetics, and purgatives, without ſucceſs.

'Profeſſor Friedreich found the whole right ſide of the face drawn towards the left, the ſkin of the right ſide relaxed and pendulous, the right eye conſtantly ſhedding tears, and the eyelids only capable of half covering it. The patient could recollect no ſymptom, in the courſe of his complaint, which could create a ſuſpicion of apoplexy. Our author, therefore, derived its origin from rheumatiſm, and drew a favourable prognoſis. Electricity, ſo ſucceſsful in the other caſes, could not be applied here, as the patient was obliged to return to the country. Extract of

 aconite

aconite and calomel were prefcribed for him, and a decoction of guaiacum for drink; a blifter was applied behind the ear, and tincture of cantharides rubbed on various parts of the affected fide of the face. In three weeks, thefe had only the effect of enabling him to fhut his right eye completely. Calomel was now given in greater quantities, till it began to excite falivation; for Profeffor Friedreich had before obferved, that this remedy did not produce the wifhed for effects, in various other difeafes, efpecially when feated in the neck, face, or tongue, until it falivated. As foon as the falivation began, the palfy diminifhed every day, and, in two months, the patient was entirely freed from his complaint.'

The local nature of this affection, the Profeffor thinks may be afcertained in particular cafes, by attention to the preceding caufes and fymptoms; and by the abfence of the general fymptoms which accompany the paralyfis arifing from affection of the brain. If rheumatifm, he obferves, affect the hard portion of the auditory nerve, where it paffes out of the fkull through the foramen ftylo-maftoideum, or its branches, a paralyfis of the mufcles of the face may certainly be the confequence. For, as from manifold experience, infenfibility and actual paralyfis are produced in other mufcles, when their nerves are affected by rheumatifm, fo the fame pathological changes happen in the mufcles of the face, when rheumatifm ftimulates the hard portion of the auditory nerve. This admits of lefs doubt, as this nerve forms fo many important plexufes and anaftomofes in the face: as it fends branches to all the mufcles moving the brow, eyebrows, eyelids, noftrils, lips, and lower jaw; and as upon the healthy ftate of this nerve, the healthy action of all thefe mufcles depends.

A conjecture is made on this fubject by Profeffor *Brunninghaufen*, that the paralyfis, in thefe cafes, arifes from the nerve being compreffed in the foramen ftylo-maftoideum, from its fheath being thickened.

The

The firft fection is concluded by feveral articles relating to Galvanifm, extracted from the writings of Profeffor *Creve*, of *Mainz*; *M. Ritter*, of *Weimar*, and others. On this fubject a variety of interefting particulars will be found in the mifcellaneous part of the prefent number.

In the fecond fection of "Medical Obfervations," the firft article is, 'A Cafe of Convulfions during the latter Part of Pregnancy; with practical Remarks on Convulfions during Pregnancy and Labour: by *James Hamilton*, jun. M. D. Profeffor of Medicine in the Univerfity of Edinburgh.' In this cafe, the patient was attacked with convulfions at feven months, the lower extremities, for fome weeks previous thereto, having been much fwelled with anafarca. Blood-letting was prefcribed, both from the arm, and from the temples by leeches, and the head was bliftered; but without any very manifeft advantage. Ten drops of a faturated tincture of digitalis were now adminiftered, every half hour, for eight hours, when great ficknefs and vomiting were excited, and a prodigious quantity of urine was paffed involuntarily. From this time the fits entirely ceafed, and the oedema difappeared. The camphor julep was afterwards directed every four hours. Labour came on at the ufual period, unattended by any unufual fymptom.

In the remarks which follow, the author attempts to revive the old diftinction between *Eclampfia* and *Epilepfia*, though rejected by Dr. Cullen. The convulfions that occur during pregnancy and labour fhould be diftinguifhed, he thinks, by the former name, the difeafe always being acute, and never, according to his experience, laying the foundation for habitual epilepfy. The eclampfia, peculiar to pregnancy and labour, differs from epilepfy, it is remarked, in the following refpects:

 '1. The

' 1. The ſymptoms which precede the attack are well marked, announcing to an experienced practitioner the approach of the diſeaſe.

' 2. If the firſt fit do not prove fatal, and if no means of cure be attempted, it is, within a few hours, followed by other paroxyſms, provided delivery do not take place.

' 3. After the paroxyſms, even where they have been very ſevere, the patient, in many caſes, continues quite ſenſible during the intervals, and the ſenſibility returns the moment the fit is off.

' 4. What may appear ſtill more extraordinary is, that, in ſome caſes, there is a remarkably increaſed ſuſceptibility of impreſſion of the external ſenſes; and this ſuperſenſation is not confined to patients in whom the convulſions are ſlight. A moſt melancholy inſtance of this kind occurred ſome time ago: I was called to viſit a patient juſt after ſhe had had one very violent fit. She overheard quite diſtinctly what I whiſpered to Dr. Randolph, then one of my private pupils, although the attendants, who were much nearer to us, and who were anxiouſly waiting for our opinion, could not diſtinguiſh a ſingle word. She was ſeized, within a few minutes, with a ſecond fit, and I immediately delivered her (of twins); but that fit proved fatal.

' 5. The aura epileptica never occurs in the caſes alluded to.

' 6. The pulſe is, in every caſe, affected in ſome degree, during the remiſſions of the fits. It is ſlow, or oppreſſed, or intermitting, or frequent and rapid; but it is moſt commonly ſlow and oppreſſed, becoming fuller and more frequent after blood-letting.

' The ſymptoms which precede the fits," the author obſerves, ' are very diſtinctly marked. They conſiſt of violent lancinating pain in the head, or in the ſtomach, in which latter caſe there is deadly ſickneſs, impaired or depraved viſion, tinnitus aurium, deep ſighing, and low delirium. The moſt ordinary combination

combination of theſe ſymptoms is pain in the head, tinnitus aurium, and dimneſs of ſight, or the ſenſation of fire flaſhing before the eyes. This combination is common to the diſeaſe, both during pregnancy and labour. But pain in the ſtomach, with deadly ſickneſs, and a kind of crampiſh ſenſation, is peculiar to convulſions during pregnancy; and deep ſighing, and low delirium precede the diſeaſe only where it occurs during labour. There is another ſymptom which takes place excluſively under the latter circumſtance, and that is violent ſhivering. When this happens during the ſecond ſtage of labour, and is preceded or ſucceeded by great irregularity of the pulſe, convulſions inevitably follow, if proper means be not ſpeedily adopted to prevent them.'

Pregnancy, the author conſiders as the chief prediſpoſing cauſe of eclampſia; and the way in which he ſuppoſes it to produce this effect is thus ſtated:—'The moſt obvious effect of pregnancy, during the latter months, is the increaſed action of the chylopoëtic viſcera, and hence the formation of a larger than uſual quantity of blood. But along with the increaſed quantity of circulating fluid there muſt be impediments to its regular circulation through the ſeveral parts of the body, partly from the great additional ſupply ſent to the uterine veſſels, and partly from the preſſure of the enlarged uterus upon the great blood-veſſels. In conſequence of this, the due return of the blood from the head muſt be in ſome degree prevented. This effect of the enlarged uterus has been diſputed by Dr. Denman; but ſeveral facts inconteſtably prove it. Thus, all authors and practitioners have obſerved, that women are moſt liable to convulſions during their firſt pregnancy. Thoſe who have a plurality of children in utero, are alſo more liable than others to the diſeaſe. And where œdematous ſwellings of the lower extremities take place to a conſiderable extent, in the latter months of pregnancy, in women of an unimpaired conſti-

 tution,

tution, copious blood-letting alone prevents the occurrence of convulſions, either before or during labour.'

The exciting cauſes are, paſſions of the mind, and various irritating powers. With regard to the proximate cauſe, all the phenomena, the author obſerves, very unequivocally prove a determination of blood to the head: as, on many occaſions, the ſymptoms preceding death are evidently thoſe of apoplexy, and effuſions of blood within the head have been diſcovered on diſſection.

Method of treatment. The firſt remedy recommended is blood-letting, both general and topical; to be repeated if the fits ſtill continue, and the oppreſſion, or fulneſs or hardneſs of the pulſe be not removed. As ſoon as the patient becomes capable of ſwallowing, camphor, in doſes of ten grains, are to be given every three or four hours, and its uſe perſevered in for ſeveral days. When the convulſions occur during labour, in addition to the above method of treatment, delivery is to be accompliſhed by the moſt expeditious means poſſible. Opium, vomiting, and the other remedies commonly employed in theſe caſes, are condemned.

The diſtinction here attempted to be made between eclampſia and epilepſy, we conſider as very unimportant. There is nothing ſtated in the caſe above deſcribed that does not very commonly occur in the latter diſeaſe. The ſuppoſed proximate cauſe, determination of blood to the head, certainly does not apply to the individual caſe related : hydropic effuſion appears obviouſly to have been the immediate cauſe, in this inſtance at leaſt. The inefficacy of blood-letting, though carried to a conſiderable extent, is but a bad proof of the author's principle ; whilſt the almoſt immediate relief that followed the evacuation of water by the digitalis, tends pretty ſtrongly to confirm the idea of the cauſe we have ſuggeſted. Admitting, for a moment, that increaſed determination and

and congeſtion of blood within the head were the immediate cauſe of the diſeaſe, it is not eaſy to conceive how frequent and large doſes of camphor can contribute to leſſen theſe. The 'recovery of every patient to whom it was poſſible to give it, ſince accident diſcovered its utility,' is but a poor proof of its curative powers.

2. 'On the Uſe of the Argentum Nitratum in Chorea Sancti Viti, and Epilepſy.' by Dr. *Thomas Hull*, of *Retford*. The author here ſtates the cure of a patient by the uſe of the argentum nitratum, as deſcribed in the laſt volume of *Annals*, to have been complete and permanent.

3. 'Letters on the Yellow Fever; addreſſed to *Joſeph Wilſon*, Eſq. American Conſul: By Dr. *William Drennan*, of *Dublin*, and Dr. *William Patterſon*, of *Londonderry*.' The object of the former of theſe gentlemen is to ſhew, that *heat* is the moſt powerful deſtroyer of contagion; and that other fluids are indebted to this one for their apparent effect, as alteratives or neutralizers of contagion. On this point he argues as follows:

'There appears a certain limited and definable range in the ſcale of heat, within which the poiſon is nurſed or cheriſhed into activity, and *above* which degree, as well as below it, this activity or life is loſt: and as, at a certain degree of cold in the atmoſphere, the poiſon is blunted or deadened, ſo there is much ground from analogy, as well as from the hiſtory of contagion, to infer, that a certain high temperature of heat may be as effectual, perhaps more ſo, in altering or decompoſing ſuch fomites of fever, without, at the ſame time, injuring the texture, or deſtroying the ſubſtances in which they are lodged. It is a certain degree of heat which hatches the poiſon, and therefore may be deemed the real fomes, or productive point; but it is probable that theſe miaſmata or morbific ſeeds, partake ſo much of a ſeminal quality as to loſe their productive or multiplying power, when

exposed to a degree of heat *above* that which suits their peculiar life and activity.

' Contagions of different kinds, seem to require a particular temperature which suits their natures and modifies their force The small-pox and measles have their particular seasons The marsh miasmata, vernal and autumnal, are extinguished by the summer heat as well as the cold of winter With respect to the plague itself, the latest traveller (Browne, page 78,) expressly says, that the extremes of *heat* and *cold* both appear to be adverse to it. In Constantinople, it is often terminated by the cold of winter; and in Kahira (Cairo), by the heat of summer. Sonnini is more particular: he says, that it always made its appearance in the month of April; and, what is very singular, it never failed to cease, at once, at the summer solstice. This period, accordingly, was the term of the precautions taken by the foreign merchants at Alexandria. Their houses were opened again, and their usual habits of intercourse were resumed, before they had made any inquiry concerning the state of the disease, so firmly were they assured that its fury had reached its limits. The Alexandrians expressed the proverb they had adopted from experience, in the lingua Franca; "*Saint Jean venir—quandar anda.*" —*i. e.* "St. John comes—the plague goes."

' In every apartment, therefore, where an instance of yellow fever *had* occurred, on the removal of the patient by death or recovery, ought not the room to be heated, by the use of a portable furnace, to a certain high temperature, which, without injury to any article, might be sufficient to penetrate to all parts impervious to any vapour; and thus decompose, or at least so much alter the nature of, the adhesive poison, as to render it harmless in future?—Might not such an experiment be properly tried on the next occurrence of the puerperal fever in the wards of the Lying-in-Hospital? a disease so fatal, and so remarkably contagious as to infect all women who happen to be delivered

delivered in the ſame room; and a poiſon ſo permanently adheſive, as to render every means of counteracting it ineffectual, except by a total abandonment of the rooms for a conſiderable time Might not the ſimple expedient of a certain degree of heat, introduced with ſafety, and *kept up a proper length of time*, be effectual in thoſe caſes where all fumigations have failed? and, as it is ſaid that all infections are deſtructive of flame, may not the converſe be a practical truth, that heat properly managed (and it is an inſtrument much more in our power than cold) will prove the moſt effectual means of deſtroying the fomites of malignant fevers?

'Aſſuredly it is deſirable to deſtroy the ſerpent in the egg. It is the multiplying and aſſimilating nature of the latent contagion which increaſes its malignant powers, when it breaks forth from its ambuſh of *cold*, in which it only ſleeps; while, in an unuſual degree of heat, it more probably is deſtroyed, and dies. Were this found to be the caſe, the quarantine of goods might be with ſafety ſhortened, and thus the intereſts of trade be greatly promoted.

'In ſhort, heat is the moſt penetrating and ſubtile of all fluids It is the great decompoſer and univerſal ſolvent; *and*, as a certain degree of warmth appears neceſſary to the vigour and vitality of contagion, ſo I think it probable that a continued immerſion in a higher degree of heat might wholly decompoſe and deſtroy it.'

The letter of Dr. Patterſon, which follows the above, inculcates the propriety of the American Government holding out offers of liberal reward (in the manner of *prize queſtions*) to men of all nations, who ſhall point out the moſt approved meaſures for preventing and curing the yellow fever.

To be continued.

ART.

Art. III. *Asthenology; or, the Art of preserving feeble Life, and of supporting the Constitution under the Influence of incurable Diseases.* By Christian Augustus Struve, *M.D.* *Translated from the German, by* William Johnston. 8vo. 431 pages, price 8s. London, 1801. Murray and Highley.

THE desire of life, the author observes, is not extinguished by the utmost degree of human misery. It continually supports itself by hope; and, though often deceived in the expectation of relief, still flatters itself that it will ensue. The wish for continuing our existence is kept alive amid the severest oppression of poverty, if only a distant ray of hope smile upon us. A disgust of life is rather a transitory state, from which the child of misfortune emerges as soon as a few painless moments restore him to the use of reason. So strong is the attachment to life, that the means of prolonging its existence have, at all times, been received by mankind with the utmost welcome; though they have not always been pleased with the sacrifices necessary for attaining this important object.

In the great number of incurable disorders to which man is liable, it is a matter of no small importance to be able to prolong, and render comfortable for a time, that life which we are not ultimately able to preserve. To enable us, in some measure, to attain these desirable purposes, is the professed aim of the work before us. Amidst a vast number, however, of valuable practical observations, the reader will find reason to complain of a want of method and connection, that has been the occasion of much confusion, and an almost endless repetition of the same sentiments. Had a clear and systematic arrangement been adopted, the bulk of the work might have been considerably lessened, and an infinite deal of labour spared to the student.

ftudent. The author pleads, in excufe, the numerous avocations of profeffional employment; but is willing, at the fame time, to hope that the undertaking may have derived fome practical advantages from this very caufe. Some part of the obfcurity met with, may be attributed, perhaps, to the tranflation, which does not always appear to convey the real meaning of the author.

Under the term *Afthenology*, the author includes as well the confideration of the valetudinary ftate, as the method of maintaining feeble life. In regard to its theory, and the application of it as an art to maintain feeble life, *afthenology* is diftinguifhable, not only from the *macrobiotic* art, or that of prolonging human life, of which it forms a fubordinate part *(afthenomacrobiotic)*, but alfo from the *antiafthenic* art of healing, or *afthenotherapia*, which is employed in removing weaknefs, and reftoring the loft powers of health. The art of maintaining feeble life leaves to thefe the direct ftrengthening method; and has for its object merely to preferve and prolong the exiftence. It extends its aim farther than the direct art of healing, and is therefore active when the phyfician deferts the patient, and declares his malady to be incurable.

The fubject of afthenology has not hitherto been fyftematically treated. The *Gerocomic* of Galen (the healing art), as applicable to old age, comprehends a part of the art of maintaining feeble life. The object of it is, to counteract the increafing hardnefs and rigidity of the veffels—to promote nourifhment—and to favour, as far as poffible, the reftoration of the loft powers. Collections, highly valuable in regard to this art, may be found in Lord *Bacon's* treatife on life and death; and particularly in *Hufeland*'s claffic work on prolonging human life. To this art belongs, alfo, the *Anathrepfis*, or *Analeptic*, of *Galen*: the art of reftoring debilitated patients, and of curing difeafes by nourifhing and ftrengthening means.

The

The author divides his work into two parts: theoretical and practical. Under the firft head, which may be termed *afthenogeny,* the caufes of the *afthenic* ftate are inveftigated. The fecond contains the practical application of the doctrine, and points out the means to be employed for maintaining feeble life in the afthenic ftate, whether the difeafe in which it takes place be curable or otherwife: this branch of the fubject is termed *Afthenocomic.* The foundation of each is a knowledge of the nature of man; and particularly the ftudy of the influence of the vital principle on the found and difeafed ftate of the body. An acquaintance with the healing art in general, and a knowledge of the ftate and habit of the individual, are likewife neceffary to the fuccefsful practice of this important art.

The firft chapter treats of the vital principle and organization of the body, and the influence of various ftimuli. In the fecond, the *afthenic* ftate of life is confidered. The different kinds of feeblenefs are here explained. Feeble life, the author obferves, may be the confequence of a deficiency of the vital principle—of its confined or irregular activity—or of defective conftitution of the organization; inftances of each are adduced. Chapter 3d. treats of the fymptoms of feeble life: care is taken to diftinguifh here between real and apparent feeblenefs, which cannot be judged of from individual fymptoms, but from feveral taken together. In the following, are confidered the fymptoms of feeblenefs in particular individuals and organs: each individual has his peculiar ftate of health and difeafe; and each organ its own irritability, nervous and mufcular power, &c.

In the fifth chapter, the remote caufes of the afthenic ftate are confidered: thefe are, 1. *Direct debilitating* caufes: fuch as cold, external violence, warm liquors; 2. *Indirect debilitating,* by withdrawing the neceffary ftimulants: as deficiency of nourifhment, both in regard to quantity and quality. The

fixth

fixth chapter treats of national debility, and debility of the age. The caufes of this general debility are not to be fo much fought for in the climate, and the prevailing conftitution of the weather, as in the mode of life by which particular ages and nations are diftinguifhed. The former circumftances, however, have a confiderable influence. The prefent race of men, the author thinks, are not equal, in many phyfical refpects, to their anceftors. Modes of life, and education, particularly of females, are the fources of the feeblenefs which at prefent prevails. In the time of the Emperor Julian, according to Ammianus Marcellinus, the Romans were fo enfeebled, that when they were failing in their pleafure-boats on the Tiber, and it happened that a fun-beam penetrated to them, they were immediately thrown into convulfions. It may be added, that Rome fell a prey to Afiatic voluptuoufnefs and effeminacy. This national debility has fometimes been remedied by the defperate cure of a revolution; the moft effeminate people, by changing their manners and mode of life, have been transformed into men of the greateft vigour. The fpirit of liberty can roufe an oppreffed people from their phyfical torpor. Dr. Rufh has fhewn the effects produced by the American revolution on the phyfical ftate of the inhabitants; many a barren pair became fruitful, and induftry and activity were every where revived.

Chapter 7th. treats, in a general way, of *afthenic difeafes*, which are reducible to the following claffes:

1. *Difeafes from an Excefs of Irritability, and enfeebled Power of Action*; for example, fpafms, and particularly thofe which arife after great exhauftion by violent pain, or immoderate ftraining of the powers. To this belongs the hiccup of dying perfons.

2. *Difeafes from weakened Power of Action, and deficient or blunted Irritability*. To this head belong all cachexies, difeafes in which the admixture of the juices

juices is ſo corrupted, that the organs loſe a great part of their ſuſceptibility for ſtimulants; as dropſy, ulcers, by which the body either decreaſes, or acquires ſpongy, bloated fleſh; alſo obſtructions in the lymphatic veſſels, ſchirrous tumours of the glands, &c.

3. *Diſeaſes from Irritability weakened in the extreme Degree, and weakened Power of Action*; for example, typhus, diſeaſes attended with violent evacuations, as flux, ſtrong hæmorrhages, where the power of motion ſuffers.

4. *Diſeaſes from oppreſſed or deſtroyed Irritability, where a certain degree of the Power of Action exiſts*; as for example, different nervous diſeaſes.

5. *Diſeaſes from oppreſſed Irritability and Power of Action*; for example, fainting, and apparent death.

6. *Diſeaſes in which the Organization is mechanically or chemically injured.* This injury relates either to the ſolids or the fluids; may ariſe from external as well as internal cauſes, from violence, or from irregularity in the bodily functions.

In the eighth chapter the author conſiders the relation of aſthenia to the duration of life. It is often obſerved, that life is of conſiderable duration under the preſſure of extreme debility. The reaſon is, that in feeble life there is leſs activity of the vital principle; conſequently the conſumption of this principle is leſs, and the organic parts do not ſuffer from violent exertion. Though the body is enfeebled, the machine hangs together, becauſe it is never put into violent motion.

Part II. *Aſthenocomic*, or the means of preſerving feeble life. There are two principal indications, the author obſerves, for maintaining feeble life: firſt, to guard againſt the conſumption of life; and, ſecondly, to retard the conſumption of it. The attainment of theſe ends forms the ſubject of the ſucceeding chapters of the work. The means of maintaining feeble life in different aſthenic ſtates, as in

in childhood, old age, and in incurable ſtates of diſeaſe, conclude the volume. A third part is promiſed, and which will treat of ſome incurable or obſtinate diſeaſes, that have a relation to the art of maintaining feeble life.

To the imperfect ſketch which has now been given (and, for reaſons before ſtated, it was not eaſy to give one more complete), we ſhall ſubjoin, by way of ſpecimen, a few extracts from the moſt intereſting parts of the work. Speaking of national debility, as the effect of adventitious circumſtances and unnatural modes of living, the author obſerves, that 'Mankind, for ſome centuries paſt, have, in compariſon of former times, been born with a weakly conſtitution. Education does not improve this innate feebleneſs, (which, however, it might do, even where a great degree of it exiſts), but increaſes it, and lays the foundation for ſickIineſs during the whole of life. We rear tender hot-houſe plants in a mode which is directly at variance with nature, deprive them of proper room for their growth, of pure air, of natural heat and motion; ſlaves to faſhion and prejudice, we form them in the extremes of cold and heat; excite their irritability in an unnatural manner, by artificial, mental, and bodily ſtimulants; debilitate their powers, or retard their expanſion, either by reſt or inactivity, or by too early and immoderate exertion, cruelly deprive the young generation of the happy innocent ſtate of childhood, and engraft upon them the pains and ſufferings of age. In the following period, the youth is either conſigned to a learned education, during which the body is totally forgotten, or he is put apprentice to ſome artiſt or tradeſman, without previous care having been taken to give his body the neceſſary firmneſs and ſtrength. In this caſe violence is offered to nature.

'The principal cauſe of the feebleneſs of the preſent generation, is the neglect of female education, particularly

particularly in regard to every thing that concerns bodily conformation and health. The whole female education is contrary to nature, and tends in a peculiar manner to weaken and debilitate. From the period of birth, girls are kept in a ſtate of inactivity and conſtraint, much more than is the caſe among boys; and the free expanſion of their powers is impeded by lacing and confining their bodies. The female ſex, at preſent, are educated in an inactive and ſedentary ſtate, in which they are afterwards retained during their whole lives, by faſhion, convenience, or their occupations. The circle of their action is confined: they are accuſtomed to trifling mechanical operations, which afford no employment to the mind; ſo that their imagination, particularly in the ſolitude to which they are devoted, finds ſufficient leiſure to indulge in immoral ideas. As they poſſeſs great ſenſibility—as the organ of the ſoul, in females, is highly ſuſceptible of irritation—and as their powers of imagination are eaſily excited by the circumſtances in which they are placed, they are readily miſled by enthuſiaſm, ſenſibility, and folly. Every art of luxury is exerted to gratify this unfortunate propenſity, and ſtill to increaſe it; health, peace of mind, domeſtic happineſs, and many other enjoyments, are ſacrificed to inceſſant diſſipation, rage for faſhion, taſte for magnificence and pride. This much-to-be-lamented ſex are torn, at too early a period, from the innocence of childhood, and placed in improper ſocial relations. Nature, in every reſpect, is anticipated; maturity, both of the mental and bodily powers, is forced before the proper time; puberty, in particular, is haſtened; and every thing is diſtorted and corrupted for the ſake of falſe glare and ſhew.

'This is a melancholy but true picture of female education, particularly in the higher ranks, and which unfortunately, by the increaſe of luxury, is more and more imitated among the lower claſſes of ſociety. And what muſt be the conſequences, when we ſuffer the

the most beautiful part of the human race to be corrupted in so unaccountable a manner? Will not this corruption be transmitted to our children? The debility of the Asiatic nation is, with justice, ascribed to the corrupt education of their females, who are bred up in close confinement, and accustomed to inactivity and idleness. And what else is the partial occupation of our girls, when employed with trifles and toys, which are not sufficient to keep the limbs in proper exercise, but idleness? This perverted education of the fair sex is the cause that our children, during the period of infancy, at least when they are entirely in the hands of women, are educated in a manner equally improper.

'Our whole conduct and mode of life is calculated to promote and increase that feebleness which is born with us, and interwoven in our frame by education. This is the case not only in the higher, but even among the lower classes. A very great part of those called people of fashion, are exposed to a mode of life, by which the powers are either only partially exercised, or kept in total inactivity. The number of those who lead a sedentary life exceeds almost that of those exposed to an active life of labour and business. In Germany, as many men almost are destined to the pen, the needle, the comb, and to supply the artificial wants of luxury, as to the plough, and the occupations requisite to procure the different articles of food, and the other necessaries of life. Among a great part of mankind the body remains inactive; the thinking faculty is exerted at the expence of the health, and the imagination and ingenuity are thereby put exclusively into activity, to the prejudice of the general conformation of the powers of the soul, as well as of the constitution. All bodily exertion is prevented by machinery. In great cities, men are almost ashamed to walk. There are ladies, of the higher rank, who will scarcely deign to touch the earth with their feet, by going a few steps into the garden.

garden. People have an averſion to every thing that requires exertion. Sedentary games have almoſt baniſhed thoſe which are connected with exerciſe.

'There is ſcarcely any thing that tends more to debilitate human nature than the unhappy paſſion for gaming. People ſpend whole nights enchained, as it were, to the gaming-table, tormented with the moſt deſtructive paſſions—inſatiable avarice, envy, concealed anger, hatred, and the deſire of revenge.

'This mode of life, among the higher ranks, is in direct oppoſition to nature and health; it is conſtrained and unnatural. By artificial wants man has rendered himſelf unfit for his deſtination; he has perverted the order of things; ſleep is denied its right; the whole machine is refined by immoderate culture; but, by theſe means, becomes leſs durable. The mind itſelf is ſoftened in the higheſt degree; and, in regard to every thing great or exalted, nothing remains but affected ſenſations. Man has been deprived of every thing manly. He is no longer a ſon of Nature, but a frail, feeble being, the creature of faſhion and convenience. His happineſs does not depend on himſelf, but on external things; even his health and his life ſeem to be productions of the world around him: ſo much has he loſt all ſelf-ſubſiſtence!

'The great enemy of the human race is luxury, with all its unhappy conſequences; ſuch as a rage for faſhion, miſdirected culture, a reſtleſs paſſion for ſhew and ſplendour, neglect of the higher duties, and even of the conformation of our beſt powers, amidſt trifling cares for poliſhing and partial formation. The conſtant companion of luxury is prodigality, and prodigality produces poverty; it is ſurrounded by an hoſt of murdering cares, which are increaſed, *ad infinitum*, by an exalted ſenſibility for all the paſſions—by ſtrong participation in the fate of one's connexions—and by internal reproach. A thouſand ungratified, real or artificial, wants keep the

the mind in a continual ftate of irritation and reftlefs exertion.

'Poverty may be claffed among the principal fources of human wretchednefs and debility; continual and exhaufting labour; infufficient reparation of the powers; poor indigeftible nourifhment; care, trouble, affliction; want of neceffary relief in difeafe, and of thofe refrefhing and ftrengthening means which the rich enjoy in fuperabundance: what caufes of debility, confumption of the body, and of the vital powers! Size and ftrength are both loft under the burthen of poverty. Such a ftate is the firft expofed to all difeafes, which, in the hovels of the poor, rage with the moft infectious virulence, and produce the greateft mortality!

'How different is our prefent mode of life from that natural fimplicity of our forefathers; and how much have we increafed the wants of our appetite, for which even Europe is too fmall! The moft pernicious circumftance of all, is, accuftoming ourfelves to ftimulating food, fpices, fpirituous and warm liquors. To this we may add, that, by the thirft of gain, thefe liquors are adulterated, and rendered unhealthful. Brandy, coffee, and tea, are by far too much ufed among all claffes, and, unfortunately, have been fubftituted in the ftead of beer, which is more healthful and nourifhing. Slimy food and potatoes are ufed in great quantities, without that exercife which is neceffary to make them digeftible. From the irritating properties of fuch food, by which the activity of the vital principle is immoderately increafed, and by which congeftions are occafioned, while the organization is weakened, we may account for fo many people being fubject to extreme nervous debility, hypochondriafis, accumulations of phlegm, and the utmoft relaxation; even while their looks and complexion difplay the bloom of health.'

The efficacy of mental activity in prolonging life, is pourtrayed in a manner highly interesting. 'By this,' it is observed, 'the vital principle will be kept longer in activity, and in sufficient activity, than by any other means. This activity tends more to promote life, when it has a certain object. Thus the life of old people is extended by their care for futurity, by building and collecting for their posterity. How many, even at the point of death, have been retained in life a considerable time by an anxious desire of completing some particular business? The application of this circumstance to our present method is easy.

'The chief point here depends on the activity of animating exertion; and, therefore, agreeable as well as disagreeable passions may contribute to maintain life, as soon as the object of the passion interests the soul; that is to say, is capable of putting it into a certain degree of activity. Thus dying persons have been kept in life two days by revenge. We must not, however, confound with these the depressing passions which lessen the activity of the soul: such as fear and care.

'More beneficial to life are the agreeable animating passions; whether the object of their exertion be agreeable in itself, or have merely an individual agreeableness. How strongly is our existence supported, even under the greatest bodily debility, by the arm of Hope! Avarice, without considering it in a moral point of view, is the cause of strong life to those who are actuated by it. It increases with increasing age, and enchains to the earth the last melancholy days of man. It is sufficiently strong to keep the soul in complete activity; and its action, the more exclusive it is, acts with greater violence, and fixes life, as it were, to one point, that is—money. Those, therefore, who in such asthenic state as that now under consideration, should attempt, by violent remedies, to cure or suppress the passion of avarice, would pursue very bad means for prolonging the lives of their patients.

'Passions

'Passions which excite an agreeable activity of the soul, either by ideas of the present or the future, serve, in a particular manner to the prolongation of life. Joy and love are these guardian angels. These agreeable passions, however, must be excited in such a degree as not to be prejudicial to life. The transitions from the one to the other must be gentle, and attended with no agitation or surprise. Joy exerts a strengthening action, as it multiplies the stimuli on the organ of the soul; either exalts the mind by the placid transition from one idea to another, or by an alternation of moderate stimuli, of different kinds, maintains an activity void of all straining. Nothing can surpass the stimulant of love, in which so many agreeable passions are united. When it does not degenerate into extravagance, it gives employment to the soul through a wide field of ideas, extends life through a hope of possessing the beloved object; and, in the possession of it, gives a new stimulus, while the wish for a longer continuation of these joys, tender attachment to the beloved object, and the habit of such a peaceful, tranquil life, in the circle of love and friendship, contribute greatly to the prolongation of our existence, and, as it were, detain us longer in this world of joy.

'But even those passions, which rise to enthusiasm, and which fill the mind with ardent and emulous zeal, provided the vital principle is not too much weakened, nor the organs irreparably injured, may, by their great excitement, overcome those impediments which confine vital activity, and thus effect a cure in the most obstinate diseases; of this we have sufficient instances. But when the vital principle is weakened and depressed, and the organs are irreparably injured, such violent excitement would put the principle of life into an incredible degree of activity, considering the state in other respects, so that the patients would perform the labour of power and strength as in their sound days; but the vital principle would,

by thefe means be exhaufted, and the end of life haftened.

'The power of the human mind is great, and much may be effected by refolution in regard to the body. This refolution, however little man may be mafter of his own life, can contribute a great deal towards prolonging his exiftence. To this head belongs the refolution of fubmitting to difagreeable privation from things prejudicial to life and health; to ufe unpleafant food; to endure painful operations, when neceffary; to undertake, on purpofe, tirefome mental labours; to ftruggle continually againft impediments, and thus to harden both the mind and body. It is a great point in the art of prolonging human life, to become mafter of one's difeafed fenfations, by firmnefs and refolution. Men often fhorten their lives by too delicate habits. In the incurable ftate, a refpite for life may be expected by this refolution. It may be carried to a great extent, and, by its means, a man may often perform incredible things, though a little enthufiafm may be fometimes combined with it. We have inftances of men who fixed the period of their death at a certain time, and who died exactly at the day. Nay, we have inftances of people, who, on their death being foretold at a certain hour, believed in the prognoftication, and actually fulfilled it. If men, then, would employ this fuperftition, fo apt to forebode misfortune, for fomething good, and extend in idea the boundary of their life to a certain remote period, might not this be a mean for prolonging life?

'How great is the confidence which patients fometimes place in the phyfician, in medicine, and the medical art in general! Strengthened by this confidence, many fufferings will be relieved. It is of great importance, when the patient is convinced that his phyfician will fave him; or, if circumftances are fuch that a cure is impoffible, that he will mitigate his fufferings, and maintain his life as long as poffible.'

ART. IV. *Obſervations on Mr.* HOME'S *Treatment of Strictures in the Urethra; with an improved Method of treating certain Caſes of thoſe Diſeaſes. By* THOMAS WHATELY, *Member of the Royal College of Surgeons in London.* 8vo. 112 pages, price 2s. 6d. London, 1801. JOHNSON.

THERE is hardly any complaint of a more diſtreſſing nature, or which more frequently baffles the efforts of art to relieve it, than the one which makes the ſubject of the eſſay before us, when in an aggravated degree. The revival, by Mr. Hunter, of the uſe of cauſtic, for deſtroying impervious, or nearly ſo, ſtrictures in the urethra, was a conſiderable improvement in modern practice. His brother-in-law and ſucceſſor, Mr. *Home*, has gone further, and recommended its uſe not only in caſes of the deſcription above-mentioned, but in thoſe ſlighter caſes of obſtruction which are ordinarily relievable by the common bougie. This he was induced to do, from finding that ſtrictures thus treated loſt that tendency to return, which they have under the treatment by ſimple dilatation; and thus a permanent, inſtead of a temporary, cure was effected. Mr. Whately's object in the preſent pamphlet is, to inculcate a greater degree of caution in the employment of this powerful remedy, and to limit its uſe to thoſe caſes only where the end cannot be attained by dilatation ſimply.

In order to give force to his ſuggeſtions, the author deſcribes the effects of cauſtic on parts of the body, ſimilar a good deal in ſtructure to the urethra; as the inſide of the cheek, and alſo the inſide of the extremity of the urethra itſelf; tracing minutely the progreſs of the ſlough, and the cicatrizing of the part which follows. He then points out the defects which appear in Mr. Home's method of uſing it, and the conſequences which ſometimes reſult from its being thus applied; and afterwards propoſes a mode

of application, which he conceives to be free from the objections ſtated.

'When the cauſtic is incloſed,' Mr. Whately obſerves, 'in the end of a bougie,' [according to the method latterly practiſed by Mr. *Hunter*, and adopted by Mr. *Home*,] 'which is done for its ſecurity, as well as to prevent its touching the membrane of the urethra in its paſſage, there may be great uncertainty with reſpect to the quantity diſſolved in any given time, ariſing from a difference in the quantity of mucus collected at its extremity, and likewiſe in the quantity of moiſture that may act upon its ſurface in different caſes. The experience of every one, who is accuſtomed to uſe the lunar cauſtic, muſt ſtrengthen this remark. It is well known that, in applying it to wounds or ulcers, we are ſometimes obliged to wipe off the mucus two or three times, from the ſurface of the cauſtic, before it will act with effect. The cauſtic bougie may therefore be ſometimes clogged with mucus, either in its paſſage to the ſtricture, or in the conſtricted part; and, as no means can be employed for removing this collected mucus, it muſt render the action of the cauſtic uncertain. Mr. Hunter, indeed, recommends a common bougie to be paſſed down to the ſtricture previous to the uſe of the armed bougie, in order to clear the canal, and to meaſure exactly the diſtance of the ſtricture from the external orifice. By this contrivance, ſome mucus may adhere to the ſides of the bougie; but it cannot readily remove all the mucus which may be collected near the ſtrictured part. There will, indeed, be always moiſture enough to liquify the cauſtic, yet the quantity of this muſt vary in different caſes, and that may add a little to the uncertainty of its action. Theſe circumſtances, among others, may account for the frequent repetition of the cauſtic practiſed by Mr. Home.

'Further; in uſing the cauſtic incloſed in a bougie, it is often applied only to the anterior part of a ſtricture,

ture, as, in many of the cafes in which it is employed, this bougie is too large to pafs the contraction. And as the natural action of the urethra propels either a fluid or folid within it towards its external orifice, fo the cauftic, when liquefied and applied to the anterior part of a ftricture only, will indeed act firft upon it, but the fuperfluous quantity will return, and act upon the membrane of the urethra in its paffage. As a proof of the truth of this remark, I have feen this membrane at the external orifice of the urethra made white, where this mode of applying the cauftic had been practifed; and, doubtlefs, the whole of the paffage between its orifice and the ftricture, was in the fame ftate: this effect may, indeed, be increafed by the diffolved ftate in which the cauftic muft be on withdrawing the bougie. The furface of the greater part of the urethra being thus irritated by the cauftic, the pain, and danger attending its ufe, muft be increafed. Befides, by thus applying the cauftic, it is prevented from acting on the whole of the strictured furface; and this, probably, is alfo a caufe of its being repeated fo often in many of Mr. Home's cafes. For although the ftrictured membrane is harder and thicker than any other part of the urethra, and although this hardnefs and thicknefs may vary in different cafes, and thereby require a greater or lefs quantity of the cauftic, yet, as the ftricture is generally compofed of a fingle fold only of the membrane, and as this cauftic readily deftroys any furface in other parts of the body deftitute of its cuticle, we may be certain that it acts in the fame manner in the urethra, under the fame circumftances.

' Again, it appears clear to me, that many of the ferious confequences produced by the cauftic, are owing to its being repeated at too fhort intervals, and to the violence of forcing through the ftricture thofe large bougies, in which it is generally inclofed. If a cauftic be repeated every two or three days (as generally

generally practised by Mr. Home), with the intention of destroying the membrane forming the strictured part, and thereby forcing a passage through it, without waiting for its gradual dilatation, it is to be feared that it will sometimes pass through a part of the substance of the corpus spongiosum. In support of this position, let me refer my reader to the plate which Mr. Hunter has given of a stricture; he will there see that this effect may be produced, even though the stricture be not in a very advanced state, as the corpus spongiosum is, by the contraction, drawn into a line with that part which was originally the urinal canal. In order to enable such of my readers as are not in possession of Mr. Hunter's treatise, to compare this statement with the plate alluded to, I have copied it in the annexed engraving. (Fig. I.) Or, if this effect be not produced, and the strictured part should only be forced open by the violent action of the bougie, yet by repeating the caustic, upon a surface already destitute of its membrane, the vessels of the corpus spongiosum may thereby be much injured. In either of these cases there is a risk of bringing on a considerable hæmorrhage.

'I must observe further, that no attempt to force open a stricture on a sudden, especially if it be one that is narrow, can be made with safety; even though the membrane lining the strictured part be destroyed by the caustic, and the contracting fibres set at liberty. The practice, therefore, of forcing a large armed bougie through a stricture, is to be reprobated, not only on account of the extreme pain it must occasion, but for a still stronger reason—it must inevitably do considerable injury to the parts, whereby serious consequences may ensue. It is indeed natural to conclude, that a passage which has been many years contracting itself (which is generally the case here), ought to be brought out of this state into the natural one, by gradual and gentle means only.

'Again,

'Again, paſſing the armed bougie into the bladder, is, I conceive, highly objectionable, though a practice reſorted to by that eminent ſurgeon, to whoſe works I have ſo frequently referred. I hope I do not miſunderſtand him; for, indeed, in ſome of his caſes, it is difficult to ſay, whether he ſpeaks of the common or the armed bougie. In the following quotations, however, he is ſufficiently explicit.'—Mr. *W.* here quotes different paſſages, in proof of what he advances.

The author next objects to the cauſtic being applied to more than one ſtricture, where there are two or three; at the ſame time obſerving, that if the original ſtricture be removed, the conſequent ones may, in general, be dilated by a common bougie. It ſhould be remarked, however, that the original ſtricture is commonly the one which is ſeated loweſt down in the urethra, and often not to be reached till the anterior ones are deſtroyed.

Mr. *Home* obſerves, that, in many caſes, he prefers the method by cauſtic to the ſimple bougie, 'as leſs painful;' 'not in any caſe being attended with diſadvantage'—'neither irritation nor inflammation taking place in conſequence of its uſe.' Mr. *Whately*, by a number of quotations from the caſes publiſhed by Mr. Home, ſhews, that the character for mildneſs here given to the cauſtic is by no means warranted by experience; on the contrary, that ſerious and alarming conſequences ſometimes reſult from it, as hæmorrhage, great irritation, and the like.

The following ingenious method is recommended for applying the cauſtic to ſtrictures in the urethra, in caſes where ſuch application appears to be neceſſary. Our readers will perceive that it does not greatly differ, except in its ſafety, from the mode formerly pointed out by Mr. *Sheriven.**

* See Med. and Chir. Rev. Vol. 6. p. 262.

'Touch

'Touch an eighth, or from that to a quarter, of an inch of the end of a bougie, of any ſize, with a ſmall bruſh dipped in common glue, as uſed by mechanics, and let the coating of glue be as thin as poſſible. The glued end muſt be immediately applied to a given quantity of powdered lunar cauſtic, put upon a piece of writing paper: this ſhould be done by alternately putting its different ſides to the cauſtic, until the whole of it adheres. The bougie, in this ſtate, muſt be laid in ſome dry place to harden, which effect will take place in a few hours. When it is ſufficiently hardened, the glued end muſt be gently rolled to and fro upon a table with a bit of ſmooth wood, about four inches ſquare, till it is perfectly level and ſmooth. If the bougie be very hard, or the weather cold, this end ſhould be previouſly warmed a little by a fire. The part thus covered with cauſtic ſhould then be very lightly rubbed with a bit of bees-wax, with the intention of giving it a very thin coating of this ſubſtance. After this, let it be kept for uſe in a glaſs veſſel well cloſed.

'The advantages attending the cauſtic bougie, prepared in this manner, are obvious.

'In the firſt place, the bougie may be of any ſize; even the ſmalleſt ſize can, by this method, become the vehicle of this powerful remedy; and may be readily paſſed into, or a little beyond, ſuch ſtrictures as are extremely narrow; or ſuch as are attended with a conſiderable contraction of the orifice of the urethra.

'Secondly. From the protection afforded by the wax coating, no part whatever of the cauſtic touches the ſides of the urethra in its paſſage to the ſtricture.

'Thirdly. A determinate quantity of the cauſtic may be applied with certainty.

'Fourthly. The cauſtic cannot be ſeparated from the bougie.

'Fifthly.

‘ Fifthly. The cauſtic may be made to act on the whole ſurface of the ſtricture at each application.

‘ Sixthly. Where there are more ſtrictures than one, and it is thought adviſable to attend to one only at the firſt, the cauſtic may be directed, and confined in its action, to any particular ſtricture, upon which the practitioner may wiſh it to operate in preference to the reſt.

‘ Seventhly. Fixing the cauſtic with glue has this additional recommendation: we can attach it with perfect ſafety to the very extremity of a bougie, and thereby apply it with more certainty to an impervious ſtricture than is practicable with the common armed bougie.

‘ When we have determined to uſe the cauſtic bougie thus prepared, the diſtance of the conſtricted part from the extremity of the penis ſhould be accurately meaſured, in order to apply it with certainty to this part only. This may be done with a common bougie. The exact ſize of the canal, at the part, ſhould likewiſe be aſcertained by the ſame inſtrument. This, in general, may be readily done. They who are uſed to paſs a bougie of a proper ſize through a ſtricture, can always tell when the point of this inſtrument is about to enter it. When it firſt touches the ſtricture, it generally ſtops; but, on preſſing the bougie gently on, it evidently feels as if its point entered a paſſage, which embraces it on every ſide. The bougie paſſes on afterwards more or leſs freely, according to the ſize of its upper part, and the openneſs of the paſſage beyond the ſtricture.

‘ Having aſcertained theſe points, it will be proper to chuſe a bougie, armed with cauſtic, in the manner already mentioned, of a ſize rather leſs than the conſtricted part. A piece of fine white thread ſhould then be tied round the bougie, at the exact diſtance of the ſtricture from the end of the penis, and another thread a quarter of an inch nearer the external end.

By

By the firſt of theſe marks it will be known, with great accuracy, when the bougie enters the conſtricted part; and the ſecond will determine how far it is puſhed beyond it. This armed bougie (previouſly oiled) may now be paſſed down to the ſtricture, and about the eighth of an inch into it, and continued in this ſituation from five to ten minutes, now and then alternately moving it forward and backward, about the eighth of an inch each way, in order to wipe off any mucus, which may have collected upon the cauſtic, and to aſſiſt in wiping off the cauſtic itſelf. On withdrawing the bougie, all the cauſtic will be found to be diſſolved; whence we may fairly conclude that it has been expended entirely on the conſtricted part.

'If the ſtricture be open enough to admit a bougie of a moderate ſize, ſuch a bougie, armed with cauſtic, may very readily be paſſed into it, or a little beyond it; but, if the ſtricture admit only a very fine bougie, and cannot be dilated ſo as to receive one of a larger ſize, great care ſhould be uſed in paſſing a cauſtic bougie of a ſmall ſize into the ſtricture. For if this ſhould not be effected, and its extremity be bent in endeavouring to puſh it forward, much effect cannot be expected from the cauſtic, as it will be diſſolved at a part of the canal anterior to the ſtricture. From what has been ſaid, it is evident that the ſucceſs of applying the cauſtic by this method will depend very much upon the nice manner in which it is performed.'

With reſpect to the quantity of cauſtic which ought to be applied, the author thinks, that, on a firſt trial, it ſhould in no caſe exceed $\frac{1}{12}$ part of a grain. If it be found, that, by two or three applications, this quantity has no effect in deſtroying the ſtrictured membrane, and that it gives little or no pain in its application, it may be cautiouſly increaſed to an 8th, a 4th, or even, in ſome bad caſes, to half a grain, at each application.

The

The caustic, in the author's opinion, ought not to be applied oftener than once a week or ten days; giving time for the separation of the slough induced by it, and the subsequent cicatrization of the sore. In the intervals between the use of the caustic, Mr. Whately advises the common bougie to be employed, but not till the irritation excited by the former has completely subsided.

Several cases are subjoined, in illustration and support of the practice here recommended. We may remark, that, in cases where the stricture is so far impervious that the point of a bougie cannot be made to enter it (and there are many such), the mode of arming the bougie with caustic, here advised, cannot be had recourse to. The caustic must be inclosed in the bougie, according to Mr. Hunter's method, or the powder must be confined to its extremity; and for this purpose one of a large size must be employed.

ART. V. *Die Wissenchaft des Manschlichen Lebens, &c.; i. e. The Science of Human Life; for the Use of those that wish not to live in vain in the World. By* C. A. STRUVE, *M.D.* Hanover, 1801.

THE object of the present work of M. *Struve* is, to teach men the true value of life, by making a wise use of it, and thus most effectually obtaining its enjoyment. Too many, he observes, trifle away their existence, or waste their faculties, in useless exertion, notwithstanding the immense variety of enjoyment, and the numberless opportunities for activity offered by the age in which we live. The chief principle of the art of making a proper use of life, in other words, the science of life *(Polybiotic)*, consists in subjecting the powers and activity of man to his reason; to enable him to withstand the torrent of temptation;

temptation; and to maintain the dominion over himſelf; leſt the moſt favourable period of his life be ſacrificed to prejudice and error.

There is an univerſal life, the author remarks, diffuſed throughout all nature, and which inceſſantly operates in extenſion and duration. On this univerſal life depend all the phenomena which we obſerve: it produces the formation of the organs, their action and re-action, as well as their connexion. Man lives in this univerſal life as an organ of the univerſal organiſm of nature; his life conſiſts in reception and communication. We diſcover in him the completeſt organization, and find his life the moſt perfect and comprehenſive. This perfection of life conſiſts in a moſt ſurpriſing combination of the intellectual with the phyſical powers, connected with the completeſt organical ſtructure. The cultivation and improvement of man are effected by means of his connection with ſociety, the action and re-action of one human being upon another. He lives not for himſelf, but for the ſpecies. But the impulſe to activity degenerates, in many men, into an uſeleſs and overſtrained exertion of the faculties; it loſes its energy, or the end of exiſtence is fruſtrated, by aiming only at ſenſual gratifications. Such degeneracies and exceſſes, which prevent the majority from ſufficiently enjoying their life, it is the object of the Polybiotic art to correct and prevent. M. *Struve* then points out the means, deduced from the principles of medicine and philoſophy, by which man is enabled to lead an active life, replete, at the ſame time, with enjoyment to himſelf, and utility to mankind. A number of inſtances of eminent individuals are adduced, as examples of the beneficial uſe that may be made of life and activity.

ART.

Art. VI. *Syſteme des Connoiſſances chymiques, et de leur Applications aux Phénoménes de la Nature et de l'Art: A Syſtem of chemical Knowledge, and its Application to the Phenomena of Nature and Art.* By C. Fourcroy, *of the National Inſtitute, Counſellor of State, &c.* 8vo. 10 vols. price 3*l* 13*s* 6*d*, or 4to. 5 vols. 5*l* 5*s*. Paris, 1800. Boosey, London.

WE need not ſay how much the ſcience of chemiſtry is indebted to the labours of M. *Fourcroy*: his writings have long been in the poſſeſſion of almoſt every tyro in this branch of knowledge. The preſent work, which differs conſiderably, in its extent and arrangement, from any of the former ones of the author, may be conſidered as a ſyſtematic whole, embracing every important fact on the ſubject, and exhibiting a perfect view of the theoretic principles which conſtitute the ſcience of chemiſtry. In a preliminary diſcourſe, beſides laying down the general plan of the undertaking, M. *Fourcroy* notices every new diſcovery of moment that had been made during the printing of the work, thus bringing it down to the preſent moment. It will not be long, probably, before an Engliſh tranſlation will familiarize it to our countrymen.

Art. VII. *Scheikundig Gedenk-ſchrift, &c.: a chemical Memoir on Volatile or Eſſential Oils, and on the beſt Methods of extracting them from the dried Plants.* By J. B. De Roover, *Apothecary and Chemiſt at Bruſſels, &c.* 8vo. Antwerp, 1800.

THE Memoir above deſcribed, was read at a public ſitting of the Society of Medicine at Antwerp, and contains various intereſting obſervations in

 pharma-

pharmaceutic chemiſtry. The author ſubmitted a conſiderable number of plants to experiment, for the purpoſe of aſcertaining the relative quantities of oil procurable from them. Theſe he found to vary conſiderably in different plants. Thus a certain quantity of the leaves of *ſavin* were found to furniſh above 22 ounces of eſſential oil, whilſt an equal quantity of balm gave only an ounce and a half. Each of the oils was diſtinguiſhable by a peculiar ſhade of colour, which the author endeavours to indicate as minutely as poſſible.

The method employed for obtaining the volatile oils in the greateſt ſtate of purity, was to diſſolve them in alkohol, from which they were afterwards ſeparated, by the addition of a double quantity of diſtilled water. The mixture being re-diſtilled, the alhohol employed is again recovered; the reſidue is found ſufficiently impregnated with the oil to anſwer the purpoſes of the *ſimple diſtilled waters.*

Art. VIII. *Hiſtoire Naturelle des Mineraux. The Natural Hiſtory of Minerals.* By E. M. L. Patrin, *Aſſociated Member of the National Inſtitute.* 5 vols. 18mo. with 40 plates, price 12 francs. Paris, 1801.

THE natural ſubſtances here treated of, the author divides into two principal claſſes: *minerals*, and *metals*. Under the former denomination are included the eight known ſimple earths: ſilex, alumine, lime, magneſia, all antiently known; and barytes, ſtrontian, zircone, and glucine, all of them the diſcoveries of modern chemiſtry. The new earth termed *aguſtine*, from its forming taſteleſs ſalts in combination with the acids, is not noticed.

The author next examines the principal ingredients that enter into the compoſition of the primitive rocks, as

as quartz, feld-ſpath, mica, &c.; and afterwards the primitive rocks themſelves, comprehending granites, porphyries, &c. To theſe are ſubjoined the precious ſtones, and other cryſtals, which are found occaſionally in the primitive rocks; together with the non-cryſtallizable ſiliceous ſubſtances, as agates, jaſpers, and the like. From the primitive rocks, the author paſſes to the ſecondary ſtrata of the earth, lime-ſtone, marles, chalk, clays, &c.; and, laſtly, to the third ſtrata, including pudding-ſtone, ſand, &c.

The *metals* are thus arranged: the number of theſe now known amounts to twenty-one. The firſt noticed are thoſe which are the leaſt removed from the earthy ſtate, paſſing on in ſucceſſion to ſuch as poſſeſs a higher degree of metallic perfection, characterized by their ductility, and the readineſs with which they are ſeparated from oxygen. The ſituation where mines are eſpecially found; the ſpecies of rock in which the metal is uſually encloſed; the ſubſtances which accompany it; and the principal properties of each metal; together with the various uſes to which it is applicable; all engage the author's attention.

Volcanic matters, bitumens, ſulphur, and other foſſil ſubſtances, not included in the other claſſes, are afterwards noticed.

ART. IX. *Principes de Phyſiologie, &c. Principles of Phyſiology; or an Introduction to the experimental, philoſophical, and medical Knowledge of the Human Body. By* C. L. DUMAS, *Profeſſor at the School of Medicine, at Montpellier.* 3 vols. 8vo. price 21 francs. Paris, 1800. Imported by BOOSEY, London.

A SYSTEM of phyſiology, embracing the modern diſcoveries in the different ſciences connected in any degree with that of life, has hitherto been a de-

 ſideratum

ſideratum in philoſophy. Since the time of the publication of the great and immortal work of *Haller* on this ſubject, the ſtudy of comparative anatomy, and eſpecially of pneumatic chemiſtry, has illuſtrated ſeveral points in phyſiology, that were before buried in obſcurity. It has been the aim of M. *Dumas*, in the work here announced, to enrich phyſiological ſcience with theſe diſcoveries, and to combine the whole into a regular and complete ſyſtem of animated nature.

In the firſt part of his work, the author exhibits a general view of the anatomy and phyſiology of organized beings. In the ſecond, the fundamental principles of the phyſical conſtitution, and of the particular œconomy of living man, are conſidered. He conſiders man in himſelf, with reſpect to his formation, ſtructure, and varieties. The ſtudy of man commences with that of the fœtus, the developement and general ſtructure of which are explained in a clear and ſatisfactory manner. This part is terminated by a methodical diviſion of the functions of the human body, which are formed into four principal claſſes. In the firſt are ranged thoſe which enable man to become acquainted with external objects, as the organs of ſenſe and motion. The ſecond claſs includes the functions which ſerve to maintain the body in its proper and natural condition; as reſpiration, and the circulation of the blood. The third comprehends thoſe which contribute to repair the waſte of the ſyſtem, to free it from impurities, and to augment its ſubſtance: as the organs of digeſtion, ſanguification, nutrition, and ſecretion. Under the laſt claſs are included the functions which ſerve to connect the individual with the ſpecies, by means of mutual wants and common affections: as generation, the formation of ideas, and the intellectual operations in general.

In the 3d part, the author treats in detail of the nervous or ſenſitive ſyſtem, and of the motory or muſcular ſyſtem. The vaſcular or calorific ſyſtem, as it is termed, and the reſpiratory, form the ſubject of the 4th part.

A fourth

A fourth volume is wanting to complete the work, and which the author informs us is ſoon forth-coming.

Art. X. *Inſtructions relative to Self-preſervation, during the prevalence of contagious Diſeaſes. By a* Physician. 8vo. 14 pages, price 6d. London. Callow.

THE prevention of the ſpreading of contagion, is a ſubject, the author juſtly obſerves, which concerns perſons of every deſcription, but more eſpecially the heads of families and ſchools. The object of the preſent inſtructions is, to point out, in a plain and ſimple manner, adapted to the uſe of the better claſs of houſekeepers, the general nature of febrile contagion; the precautions proper to be obſerved when it occurs in a family; the proper regimen and diet, during the prevalence of contagious diſeaſes; and the management of the ſick room.

The following remarks occur with reſpect to certain reputed *preſervatives* from infection, ſuch as camphor-bags, the ſmoking of tobacco, &c.: 'It is a very common practice with people who go in the way of malignant fevers, to carry about them a piece or two of camphor, tied up in muſlin, or kept looſe in the pockets. This can do no harm; but it muſt not be alone relied on, nor lead to a neglect of thoſe more certain meaſures, which we have before pointed out; otherwiſe diſappointment and miſchief will enſue. With more reaſon has the ſmoking of tobacco been recommended by many medical authors. It is related, that, in the great plague at London, the tobacconiſts eſcaped infection; and the celebrated Dutch phyſician, Diemerbroek, attributes his not taking the infection, while the plague raged at Nimeguen, to the frequent uſe of the pipe; yet it will not

 avail,

avail, if the other leading precautions are neglected. We find that many tobacco-ſmokers fell victims to the contagion which raged at Moſcow. A tea-ſpoon full of *Huxham*'s tincture of bark, taken in a wine-glaſs full of cold water, may be recommended as the beſt preſervative remedy in moſt caſes; the other general precautions being at the ſame time attended to.'

This little pamphlet is aſcribed, we believe juſtly, to the pen of Dr. *G. Pearſon.* It is certainly well calculated to fulfil its intended purpoſe.

ART. XI. *An Inquiry into the Nature and Cauſe of that Swelling in one or both of the lower Extremities, which ſometimes happens to Lying-in-Women.* Part. II. *By* CHARLES WHITE, *Eſq. F.R.S. &c. &c.* 8vo. 134 pages, price 3s. 6d.; on fine paper and coloured plates, 4s. 6d. London, 1801. MAWMAN.

THE author of the eſſay before us is well known to the public by a former publication, on the ſame ſubject, in the year 1784; and, alſo, by an intereſting volume of caſes in ſurgery, and other works. His reaſons for appearing again before the public on the ſubject of the puerperal diſeaſe in queſtion, and which, he thinks, may be beſt termed, *Phlegmatia alba dolens puerperarum*, are thus ſtated. 1. Becauſe the diſorder has been confounded with others, even by men of ſcience. 2dly. New facts have occurred for the further elucidation of the ſubject; and, 3dly. Becauſe the author's deſcription of the nature and cauſe of the diſeaſe has been controverted, and other theories advanced in its place.

This diſorder, Mr. *White* obſerves, occurs leſs frequently than has been generally imagined. In the 71ſt volume of the Philoſophical Tranſactions, p. 2. art. 22. Dr. *Bland* ſays, ' of 1897 women delivered at

at the Weſtminſter General Diſpenſary, five had large and painful ſwellings of the legs and thighs, but recovered.' This is nearly one in 389, ſuppoſing all theſe inſtances to have been the diſorder in queſtion, which is not certain. From ſome facts, the author is inclined to think, that its occurrence is by no means ſo frequent as this: out of 8000 women delivered at the Mancheſter Lying-in-Hoſpital, and at their own habitation, four only had the diſorder here treated of, or only one in 2000. The author is acquainted with ſeveral men-midwives, who have been in long and extenſive practice, and who have never ſeen it; and to this may be added, that few perſons who do not practiſe midwifery, have an opportunity of ſeeing this diſeaſe at its commencement. It is not ſurpriſing, therefore, that it ſhould have been confounded with anaſarca, phlegmon, inflammation of the abſorbents, abſceſs, mortification, peritonitis, and rheumatiſm.

In order to judge of the propriety of the treatment of the diſeaſe, and the truth of the theory laid down by the author, reſpecting its nature and cauſes, it is abſolutely neceſſary to attend particularly to the deſcription here given of it; for it appears certain, that ſome of the writers who have oppoſed Mr. White's view of the diſeaſe, have been treating of a widely different affection. 'The *pathognomonic ſymptom,*' the author obſerves, 'is a ſwelling of the whole *labium pudendi,* on the ſame ſide *only,* on which there is a firm, gloſſy, warm, tenſe, elaſtic, painful, ſudden ſwelling, of a pale white colour, which attacks the hypogaſtric region, the loins, nates, groin, thigh, leg, and foot of a lying-in woman; and I muſt beg leave to impreſs this upon my readers, that when one limb only is affected, the ſwelling is confined ſo exactly to the labium pudendi of that ſide, that, if a line were drawn from the navel to the anus, it would be found never to go beyond that line, in the ſmalleſt degree; and I muſt obſerve, that this pathognomonic ſymptom of the ſwelling of the correſponding labium pu-

dendi *only* is never wanting in any cafe whatever. About nine times out of ten, it attacks one fide only, and the limits are fo exactly drawn, that in no cafe whatfoever does the fwelling rife higher than the loins and hypogaftric region, nor fpread wider than the fpine and the linea alba. And this is fo conftantly and invariably the cafe, that it may confidently be faid, *thus far fhalt thou go, and no farther.*

'After carefully reviewing the cafes which have fallen under my own infpection, thofe of my friends and correfpondents, and thofe upon record, I am well fatisfied that there is not one, of the genuine difeafe, in its fimple, uncomplicated ftate, fufficiently authenticated, that ever proved fatal—not one that was ever attended with any external inflammation, abfcefs, gangrene, or burfting of the fkin, in the legs, or thighs, as in anafarca. That though the pain fometimes *begins* in the ham, or the calf of the leg, yet the fwelling never begins fo low. Miftakes have arifen on this head, from the patient not underftanding thoroughly the queftion, whether it was the pain or the fwelling, which began there. Though it fometimes attacks women in both the lower extremities, in the fame, or in different lyings-in, yet it never attacks the fame fide more than once; and it never attacks women after a mifcarriage in the early months of pregnancy. There are no red or purple ftreaks running up the limb, no inflammation on the fkin, nor any vifible inflammation whatever. The fkin not only lofes its natural colour, and puts on the appearance of a milky whitenefs; but all the blue veins difappear, even the varicofe ones, if there had been fuch before the difeafe began; and there is lefs appearance of blood in the limb than in the natural ftate. There is no fenfation of itching, nor throbbing in the part; the pulfe, though frequent, is neither full, hard, nor ftrong; no abfolute nor relative plethora in the part, and frequently none in the fyftem generally. The limb is not leffened by a horizontal pofition, the im-

preffion

preſſion of the finger is not left upon it, nor does it iſſue any fluid if punctured with a lancet, when the diſorder is at its acme, and ſeldom when it is upon the decline.

'The great pain in the loins, and in the hypogaſtric region, afterwards in the conglobate glands, in the groin, ham, and middle of the leg, and, laſtly, in the whole lower extremity, appear to be ſolely in conſequence of ſudden diſtenſion. There can be no metaſtaſis or tranſlation of matter from one limb to the other; for though I have never known the diſorder commence, *exactly at the ſame inſtant, in both the lower extremities,* I have known it complete in both at the ſame time.

'I have never known it change its type to any other diſorder, nor have I known any other diſorder terminate in this; but I do not mean to ſay that other diſorders may not precede, accompany, or ſucceed it; for I am ſatisfied that it will not prevent any other diſeaſe.'

The author then enters into a refutation of the different opinions entertained by late writers, on the diſeaſe;* but as they are evidently ſpeaking of a different affection, it is unneceſſary for us to enter into this part of the Inquiry. It may be proper to obſerve, however, that the idea entertained by Dr. Ferriar of the general oedema of the limb being occaſioned by an inflamed ſtate of the abſorbents, is contradicted by numerous facts of inflamed lymphatics in conſequence of injuries, or the abſorption of poiſonous matters, where the ſwelling is confined to the veſſels themſelves, or their immediate vicinity, characterized by red or purple ſtreaks, with hardneſs, running along their courſe.

The following is given as a brief account of the ideas entertained by the author of the nature and cauſe of this diſorder.

* See Med. and Ch. Rev. vol. 7. p. 367.

'When

'When the brim of the pelvis forms a prominent line on the body of the os pubis, and is as ſharp as an ivory paper-folder, or as ſome knives, and jagged like a ſaw; and the gravid uterus, by the violence of the labour-pains, forces the lymphatics againſt this ſharp edge, it muſt cut or lacerate thoſe lymphatic veſſels which wrap round it, and dip down into the pelvis; and they will diſcharge their contents. In ſome caſes, the extravaſated lymph will be immediately abſorbed by the lymphatics in the neighbourhood. In others, it will accumulate, coagulate, and give pain, ſome days prior to the ſwelling of the limb, by ſeparating the peritonæum from its connections with the adjacent parts, and at laſt will be abſorbed. But in ſome few caſes it may not be abſorbed, but produce an abſceſs. In a ſpace of time, generally between twenty-four hours and ſix weeks, the orifices in the ruptured lymphatics will cloſe, and they will be gorged with lymph, which will be impeded in them; but it will continue to flow in thoſe which have not been ruptured, particularly in the deep-ſeated lymphatics which accompany the iliac artery, and, by anaſtomoſing with thoſe that have been ruptured, will prevent any material injury for the preſent, and, in time, will entirely ſupply their place.

'By the obſtruction of the lymph, the groin, labium pudendi, and upper part of the thigh, ſwell; the tumour gradually extends towards the leg and foot, and grows very painful, white, tenſe, elaſtic, hard, gloſſy, and uniform. The pain is occaſioned by the great and ſudden diſtenſion of the lymphatic veſſels; the whiteneſs, by the parts being filled with lymph, and compreſſing the blood-veſſels ſo much, that neither arteries nor veins appear externally. The tenſeneſs, elaſticity, hardneſs, and gloſſineſs, depend on the great diſtenſion of the lymphatic veſſels, which do not eaſily give way; the uniformity of the ſwelling, on the diſtenſion of the cutaneous lymphatics, which are innumerable. By this great diſtenſion, and conſequent

ſequent compreſſion, the exhalents are prevented from ſecreting ſo much lymph, and conſequently there is not ſo great a ſupply. The lymphatic glands ſometimes grow painful and ſwell, which is owing to the *vaſa inferentia* ſending the lymph into them quicker than the *vaſa efferentia* can diſcharge it. Pains will ſometimes attack parts which have neither lymphatic glands, large nerves, blood-veſſels, nor lymphatics, and which can only be accounted for from ſympathy. The words *calidus*, hot, or warm, when ſpeaking of the ſwelling of the limb, are made uſe of in contradiſtinction to leuco-phlegmatia, in which the limb is white and cold: in this diſorder it is white and warm. When ſpeaking of increaſed heat, it is to be underſtood of the whole body, and not of the limb alone, as that does not appear to be hotter than the other parts of the body. There is heat in all fevers, but that does not imply inflammation; every fever is not inflammatory. There is a quick pulſe, but that is owing to irritation, by the ſudden and violent diſtenſion of the irritable coats of the lymphatic veſſels.

'If you puncture the ſkin with a lancet, the lymph does not flow out, as in anaſarca, where it is thin and lodged in the cells of the cellular membrane, which communicate throughout the whole body. In this diſorder you do not puncture the trunks of the abſorbents, but the *minima vaſa*, only, of the cutaneous lymphatics. The violent pain and diſtenſion do not continue many days; the anaſtomoſing lymphatics begin to enlarge, and, by degrees, carry off the obſtructed lymph; but it is many weeks before it has obtained a perfectly free paſſage.'

Reſpecting the *cure*, the author is very brief.—'Since I wrote my firſt Inquiry,' he obſerves, 'little has been added to the method of cure, except that of bleeding with leeches by Mr. Trye, which was followed by Dr. Ferriar; the exhibition of Cremor Tartari by Levret, which is alſo recommended by Dr. Ferriar; the introducing of mercury by Mr. Trye, which

was

was adopted by Dr. Hull; and digitalis, in the firſt ſtage, by Dr. Hull.

'Much muſt be left,' it is added, 'to the diſcretion of the practitioner, who ought to preſcribe according to the ſymptoms and circumſtances of the caſe: no certain rule can be laid down. If the patient be robuſt and plethoric, the antiphlogiſtic plan may be purſued with advantage; but if ſhe be reduced, by floodings or other evacuations, it would be highly abſurd to debilitate her ſtill more. It was ſaid of two phyſicians of very great eminence, practiſing phyſic at the ſame time at Edinburgh, that one of them always endeavoured *to take away the cauſe*, ſuppoſing *the effect would ceaſe*; the other paid no regard to that rule, but attacked the ſymptoms; and the latter had the reputation of being the more ſucceſsful practitioner. That rule certainly holds good in the practice of ſurgery; but in phyſic it may be otherwiſe; for *Natura eſt medicatrix morborum*; and we ſhould ſpeak more modeſtly, and perhaps more juſtly, if we were to ſay, that we had conducted our patient ſafely through the diſorder, rather than that we had cured her. Facts, in regard to remedies in diſeaſes, are frequently with great difficulty aſcertained; and what appears to cure the ſame complaint in one perſon, may not ſucceed in another, and yet the patient may do well. When this diſeaſe is complicated with others, as phlegmon, eryſipelas, anaſarca, thoracic inflammation, inflammation of the abſorbents, puerperal fever, &c. it muſt be treated accordingly.'

Although the cauſe of the diſeaſe here pointed out has not been demonſtrated, it is at leaſt rendered extremely probable from the attending circumſtances; and the anſwers given by the author to the objections which have been ſtarted to it, have much weight. That preſſure on the lymphatics, impeding the courſe of the lymph through them, is ſufficient to occaſion a rupture of their ſides, is proved by the experiments of

of Mr. *Aſtley Cooper*, on tying the thoracic duct of animals:* and if this be admitted as the cauſe of *phlegmatia dolens*, the various ſymptoms admit of an eaſy explanation—that is, the ſymptoms as deſcribed by Mr. *White*; for the deſcriptions of ſome other writers do not apply.

ART. XII. *Journals of the Royal Inſtitution of Great Britain.* Nos. II. and III. *June* 13, 1801. 8vo. 32 pages, price 1s. CADELL.

WE feel much ſatisfaction in announcing to our readers the commencement of the *literary* department of this very noble Inſtitution; an Inſtitution, of which, with great truth, it is obſerved, that it muſt ſoon become extremely intereſting and uſeful; and that it will long remain an ornament to the metropolis—and a proud monument of the energy, wealth, and liberality of the private individuals of the Britiſh nation. The unparalleled ſupport it has, even in its infancy, experiened, from characters the moſt exalted in rank and talents, and the extent of its funds, the produce of voluntary contributions, amounting, in the ſhort period of a few months, to the vaſt ſum of 23,200*l.* cannot fail to enſure the permanence of the eſtabliſhment, and the completion of the objects it had in view. Great part of the preſent, and preceding numbers of the Journal, is devoted to the explanation of the nature and objects of the Inſtitution, and the progreſs already made towards their attainment. In a ſhort time, it is expected that the Journals will appear at regular intervals, probably once a week. Theſe will contain not only an account of what is doing at the Royal Inſtitution, and in the country at large, to introduce new and uſeful

* Med. Records and Reſearches, 1798.

inventions

inventions and improvements; but will alſo contain ſelections from all the neweſt foreign ſcientific journals, and other ſcientific publications, which will all be regularly taken in. Conducted on this plan, it was ſcarcely neceſſary to add, that the Journals of the Royal Inſtitution of Great Britain will become one of the moſt intereſting, and moſt uſeful, periodical works that has ever appeared in any country.

The preſent number contains 'ſome obſervations relative to the means of increaſing the quantities of heat obtained in the combuſtion of fuel,' by Count *Rumford;* 'on the uſe of ſteam, as a vehicle for conveying heat from one place to another,' by the ſame author; and, laſtly, 'an account of a new eudiometer,' by Mr. *Davy:* the latter we ſhall tranſcribe.

'The dependance of the health and exiſtence of animals upon a peculiar ſtate of the atmoſphere, and the relations of this ſtate to proceſſes connected with the moſt eſſential wants of life, have given intereſt and importance to inquiries concerning the compoſition and properties of atmoſpheric air.

'This elaſtic fluid has been long known to conſiſt chiefly of oxygene and nitrogene mingled together, or in a ſtate of looſe combination, and holding in ſolution, water.

'A variety of proceſſes have been inſtituted, with the view of determining the relative proportions of the two gaſes; but moſt of them have involved ſources of inaccuracy; and lately all, except two (the ſlow combuſtion of phoſphorus, and the action of liquid ſulphurets), have been generally abandoned.

'Both phoſphorus, and ſolution of ſulphuret of potaſh, abſorb the whole of the oxygene of atmoſpheric air at common temperatures; and they do not materially alter the volume, or the properties, of the reſidual nitrogene; but their operation is extremely ſlow; and, in many caſes, it is difficult to aſcertain the period at which the experiment is completed.

'I have

'I have lately employed, as an eudiometrical ſubſtance, the ſolution of green muriate, or ſulphate, of iron, impregnated with nitrous gas; and I found that it is in ſome reſpects ſuperior to many bodies heretofore uſed, as it rapidly condenſes oxygene, without acting upon nitrogene; and requires for its application only a very ſimple and a very portable apparatus.

'This fluid is made by tranſmitting nitrous gas through green muriate, or ſulphate, of iron, diſſolved to ſaturation in water.* As the gas is abſorbed, the ſolution becomes of a deep olive brown, and when the impregnation is completed, it appears opaque and almoſt black. The proceſs is apparently owing to a ſimple elective attraction; in no caſe is the gas decompoſed; and under the exhauſted receiver it aſſumes its elaſtic form, leaving the fluid, with which it was combined, unaltered in its properties.

'The inſtruments for aſcertaining the compoſition of the atmoſphere, by means of impregnated ſolutions, conſiſt ſimply of a ſmall graduated tube, having its capacity divided into one hundred parts, and greateſt at the open end; and of a veſſel for containing the fluid.

'The tube, after being filled with the air to be examined, is introduced into the ſolution; and, that the action may be more rapid, gently moved from a perpendicular towards a horizontal poſition. Under theſe circumſtances the air is rapidly diminiſhed; and, in conſequence of the dark colour of the fluid, it is eaſy to diſcover the quantity of abſorption. In a few minutes the experiment is completed, and the whole of the oxygene condenſed by the nitrous gas in the ſolution, in the form of nitrous acid.

'In all eudiometrical proceſſes with impregnated ſolutions, the period at which the diminution is at a ſtand

* Dr. Prieſtley firſt obſerved this proceſs: for a particular account of it, ſee Reſearches, Chemical and Philoſophical, page 152. Johnſon.

ſtand muſt be accurately obſerved; for, ſhortly after this period, the volume of the reſidual gas begins to be a little increaſed, and, after ſome hours, it will often fill a ſpace greater by ſeveral of the hundred parts on the ſcale of the tube, than that which it occupied at the maximum of abſorption.

'This circumſtance depends upon the ſlow decompoſition of the nitrous acid (formed during the experiment), by the green oxide of iron, and the conſequent production of a ſmall quantity of aëriform fluid, chiefly nitrous gas;* which having no affinity for the red muriate, or ſulphate, of iron produced, is gradually evolved, and mingled with the reſidual nitrogene.

'The impregnated ſolution with green muriate is more rapid in its operation than the ſolution with green ſulphate. In caſes when theſe ſalts cannot be obtained in a ſtate of abſolute purity, the common or mixed ſulphate of iron may be employed. One cubic inch of moderately ſtrong impregnated ſolution is capable of abſorbing five or ſix cubic inches of oxygene, in common proceſſes; but the ſame quantity muſt never be employed for more than one experiment.

'A number of comparative experiments, made on the conſtitution of the atmoſphere at the Hot Wells, Briſtol, in July, Auguſt, and September, 1800, with phoſphorus, ſulphurets of alkalies, and impregnated ſolutions, demonſtrated the accuracy of the proceſſes in which the laſt ſubſtances were properly employed. The diminutions given by the ſulphurets, were indeed always greater, by a minute quantity, than thoſe produced by phoſphorus and impregnated ſolutions: but the reaſon of this will be obvious to thoſe who

* The decompoſition of nitrous acid, by ſolutions containing oxyd of iron at its minimum of oxydation, is a very complex proceſs. The green oxyd, during its converſion into red oxyd, not only decompoſes the acid, but likewiſe acts upon the water of the ſolution; and ammoniac is ſometimes formed, and ſmall portions of nitrous oxyd and nitrogene evolved with the nitrous gas.

have

have ſtudied the ſubject of eudiometry. In no inſtance was it found that 100 parts in volume of air contained more than 21 of oxygene: and the variations connected with different winds, and different ſtates of temperature, moiſture, &c. were too ſmall, and too often related to accidental circumſtances, to be accurately noticed.

'In analyſing the atmoſphere in different places, by means of impregnated ſolutions, I have never been able to aſcertain any notable difference in the proportions of its conſtituent parts. Air, collected on the ſea, at the mouth of the Severn, on October the 3d, 1800, which muſt have paſſed over much of the Atlantic, as the wind was blowing ſtrong from the weſt, was found to contain 21 per cent. of oxygene in volume; and this was nearly the proportion in air ſent from the coaſt of Guinea, to Dr. Beddoes, by two ſurgeons of Liverpool.

'If we compare theſe reſults, with the reſults gained more than twenty years ago, by Mr. Cavendiſh, from experiments on the compoſition of atmoſpherical air, made at London and Kenſington; conſidering, at the ſame time, the reſearches of Berthollet, in Egypt and at Paris, and thoſe of Marti, in Spain, we ſhall find ſtrong reaſons for concluding, that the atmoſphere in all places, expoſed to the influence of the winds, contains very nearly the ſame proportion of oxygene and nitrogene: a circumſtance of great importance; for, by teaching us that the different degrees of ſalubrity of air do not depend upon differences in the quantities of its principal conſtituent parts, it ought to induce us to inſtitute reſearches concerning the different ſubſtances capable of being diſſolved or ſuſpended in air, which are noxious to the human conſtitution: particularly as an accurate knowledge of their nature and properties would probably enable us in great meaſure to guard againſt, or deſtroy their baneful effects.'

ART.

Art. XIII. *Manuel de Medecine Pratique, &c. A Manual of practical Medicine, an Elementary Work; to which are added ſeveral Formulæ of Medicaments. By* C. Geoffroy, *M.D. Member of the National Inſtitute, &c.* 2 vols. price 6 francs. Paris, 1801.

THIS work is intended for the uſe of the officers of health, reſident in the villages of the Republic, and contains a ſuccinct account of the moſt common maladies of the country. It is divided into two parts, the firſt comprehending acute, the latter chronic diſeaſes.

The author divides chronic diſeaſes under ten heads: 1. thoſe which ariſe from ſerous accumulation, as dropſies; 2. thoſe which depend on congeſtion of pus; 3. thoſe owing to *viſcidity of the lymph*, as obſtructions; 4. putrid diſorders and mortification, including gangrene, cancer, and worms; 5. increaſed evacuations, including different ſpecies of hæmorrhagy; 6. diſorders ariſing from ſuppreſſed diſcharges; 7. thoſe ſuppoſed to depend on acrimony of the humours: amongſt others, rheumatic and gouty affections, cutaneous maladies, and ſcurvy; 8. lethargic diſorders; 9. convulſions; and laſtly, diſeaſes induced by poiſons. Gonorrhœa, and lues venerea, form the ſubject of a ſupplementary ſection.

Art. XIV. *Des Maladies Nerveuſes: On Nervous Diſorders. By* M. N. S. Guillon-Pastel, *M.D.* Paris, 1800.

IN the eſſay above announced, the author endeavours to prove that the diſorders termed nervous, are not, as heretofore, confined chiefly to the female ſex, or the inhabitants of cities and towns, enfeebled by

by luxury of various kinds, and an impure atmoſphere. They have found their way, he obſerves, into the country, where vice and immorality have generated phyſical vices, unknown to our ruſtic anceſtors. Diſeaſes formerly were ſimple, free from complication, and afforded an eaſy diagnoſtic. At preſent we ſee a dreadful accumulation of maladies in the ſame individual, the characters of which could before be found only in a great variety of ſubjects.

In his explanation of the diſeaſes in queſtion, the author inſiſts more on the humoral pathology, than will be agreeable to the generality of Britiſh practitioners.

ART. XV. *Memoires ſur la Nature et le Traitement de pluſieurs Maladies, &c. Memoirs on the Nature and Treatment of various Diſeaſes. By* C. PORTAL, *Profeſſor of Medicine.* Paris, 1800.

M. *PORTAL* ranks very high as a practitioner in France, where his works have been exceedingly well received. The volume before us contains a variety of eſſays on different ſubjects, publiſhed from time to time, ſingly, or in various academic collections, chiefly in thoſe of the late *Academy of Sciences*. The author began his profeſſional career in the practice of ſurgery, many points of which he has illuſtrated by his writings, and has ſimplified and improved many of the inſtruments of this art. No perſon was more fully convinced of the neceſſity of anatomical knowledge to the phyſician; and no one laboured more to inveſtigate the nature and origin of diſeaſes, by examinations of the dead body, when they terminated fatally.

ART.

Art. XVI. *Traité de la Dyssenterie en general, &c. A Treatise on Dysentery in general; containing a new Method of Cure, invented by* J. C. Jacobs, *M.D. &c.* Paris, 1800.

THIS is a tranflation into French, by the author himfelf, of a work originally publifhed in Latin, and which was favourably received by the learned, at the time of its firft appearance. He endeavours to eftablifh three general caufes of dyfentery: viz. foreign irritation in the inteftines; a defect of the natural mucus of thofe parts; and, a too great irritability of the parts themfelves. Thefe caufes may act fingly, or they may be varioufly combined. The treatment peculiarly adapted to each of thefe cafes is pointed out and explained.

MISCEL-

MISCELLANEOUS INFORMATION.

§ 1. *Galvaniſm.*

WE have, on ſeveral occaſions, in the courſe of our work,* had to notice this new and intereſting branch of ſcience; a ſubject that daily acquires greater importance, from its relation to other branches of knowledge, and particularly to the doctrines of the new chemiſtry, the complete eſtabliſhment or overthrow of which ſeems now to be with reaſon expected from this ſource. This view of Galvaniſm has, in a great meaſure, ſuperſeded the application of it to organic bodies, in relation to which its phenomena at firſt attracted notice, as indicating the exiſtence of a new, and, till then, undiſcovered principle in living bodies; and even explaining, in the opinion of ſome ſanguine philoſophers, the very nature and eſſence of the living principle itſelf. A more calm inveſtigation of the ſubject, however, has ſhewn that the phenomena of galvaniſm are by no means referable to a peculiar property reſiding in living bodies, but that theſe are acted upon by the galvanic influence, as by a ſtimulus merely; and there ſeems, in fact, little reaſon to doubt, that this *influence* is one and the ſame with that of the *electric fluid*,—if this term can be properly applied to a ſubject, the intimate nature of which we are ſo entirely unacquainted with.

The ſubject of galvaniſm has, of late, excited the attention of many diſtinguiſhed philoſophers, both in England, and on the Continent of Europe; and many important diſcoveries have been the reſult of their inveſtigation. A variety of intereſting facts have been brought to light in regard to the galvanic influence, which enable us, at preſent, to form a theory on the ſubject, agreeing pretty well with the phenomena, and affording an explanation of the ſubject not altogether unſatisfactory.

It was ſuppoſed, at firſt, that two different metals were eſſentially neceſſary in order to excite the galvanic action. This, however, is found not to be the caſe. But, in all caſes, the preſence of a fluid is required, to form the galvanic circle, or chain. According to M. *Ritter*, of Germany, the fundamental requiſite for the galvanic action, is the concurrence of at leaſt two heterogeneous conductors of galvaniſm, of one form of aggregation, and of one conductor of a different form; that is, of two ſolids and one fluid; or of two fluids and one ſolid The ſolid conductors are the metals and charcoal, all of them *oxydable* ſubſtances; while the fluid conductors of the influence are all *oxydated* ſubſtances. This, he obſerves, is exactly what is neceſſary for the proceſs of oxydation; and the actual oxydation of one of the ſolids, and the de-oxydation of one of the fluids, which are found always to take place, prove that galvaniſm is nearly allied to chemical action. On laying wetted plates of zinc and ſilver, or other heterogeneous metals

* See Med. and Chir. Rev: Vols. 5, 6, and 7, paſſim.

together,

together, it is found that the moſt oxydable of the two becomes, in a ſhort time, covered with oxyd at the point of contact, and for ſome diſtance around. This explains many common occurrences which have been little thought of, though they have not entirely eſcaped obſervation. Thus it is well known that running mercury retains its metallic ſplendour long, but that all amalgams quickly tarniſh. Pure tin retains its argentine appearance for years; which is not the caſe with its alloys. There are extant Etruſcan inſcriptions, on pure lead, in a ſtate of perfect preſervation; while modern medals, of mixed metals, have decayed in a few years. The alloy of tin, uſed in ſoldering copper-plates, is oxydated at its contact with that metal. The iron nails uſed in attaching copper to the bottoms of ſhips, quickly corrode the copper in contact with them.

Colonel *Haldane*, in Mr. *Nicholson's* Journal, for October 1800, relates the reſult of a ſet of experiments, inſtituted with a view of aſcertaining the comparative power of the different combinations of metals, in producing the galvanic phenomena. In the following table they are arranged in the order of their powers.

Zinc—with gold, ſilver, iron, copper, lead, tin, mercury.
Iron—with mercury, gold, ſilver, copper, lead, tin.
Lead—with gold, ſilver, copper, tin, mercury.
Tin—with gold, ſilver, copper, mercury.
Copper—with gold, ſilver, mercury.
Silver—with gold.

In this table, the metal in the firſt column always forms the oxydating pole.

Dr. *Moyes*, of *Edinburgh*, in a letter to Dr. *Garthshore (Phil. Mag. for April)*, gives an account of ſeveral intereſting experiments made by him with the galvanic pile of *Volta*. He found that when two gold wires, connected with the extremities of a galvanic column, containing 400 ſquare inches of zinc and 400 of copper, were inſerted into the legs of an inverted glaſs ſyphon, 2-10ths of an inch in diameter, and containing 30 grains of diſtilled water; the water in one leg gave oxygen gas, and that in the other hydrogen gas, without any apparent diminution of rapidity, during a period of 24 hours. He found, alſo, that when the quantity of water employed was very ſmall, the production of gas in this experiment ſoon began to be ſenſibly retarded, and in a few hours totally ceaſed, though the water had loſt but a ſmall proportion of its bulk. When this ſyphon was filled with the juice of red cabbage, the liquor in one leg ſoon became red, and that in the other as ſoon became green. When the galvanic column was placed under an exhauſted receiver, its power of giving ſhocks was almoſt entirely ſuſpended; but it detached the gaſes with a remarkably greater degree of vivacity. When a communication was made between the extremities of a powerful galvanic column, containing 800 ſquare inches of metal, a ſpark reſembling the electric was diſtinctly perceived, and its ſhocks were greater than a man could well bear. Theſe experiments ſhew, Dr. *M.* thinks, that no quantity of pure water can ever be totally changed into gas by any known action of the galvanic influence, and

and that, ſtrictly ſpeaking, water is not decompoſed by furniſhing gas to the galvanic influence; it giving no oxygen where it furniſhes hydrogen, and no hydrogen where it furniſhes oxygen.

That the two airs produced in theſe experiments cannot be conſidered as conſtituent parts of the water employed, appears further proved by the experiments of M. *Ritter*, who conſiders the airs rather as two matters produced by a part of the water combined with the galvanic fluid, and that the generation of one is in no manner dependant on the production of the other.

Mr. *Davy* has made a ſeries of experiments on this ſubject, which are highly deſerving of notice. By them he has been enabled to aſcertain, that zinc, whether connected with ſilver in ſingle galvanic circles, or conſtituting the plates of the galvanic pile, ſeems to undergo no oxydation at common temperatures, as long as the water in contact with it is pure; that is, holding in ſolution no oxygen or nitrous gas, and no acids. On the other hand, wherever the water in contact with the metallic plates, holds atmoſpheric air, or oxygen, or nitrous gas, or nitrous acid, or marine acid, &c., in ſolution, oxydation of the zinc takes place. When the zinc in contact with water, holding in ſolution ſubſtances containing looſe oxygen or acids, is oxydated, theſe ſubſtances are always found to be altered, or they exert ſome chemical affinities. The galvanic pile conſumes oxygen gas, and the oxygen of atmoſpheric air. Wetted zinc, in contact with nitrous gas, converts it into nitrous oxyd and ammonia.

The galvanic pile, therefore, ſeems incapable of acting when the water between the plates is pure, the action ſeeming to depend wholly on the preſence of atmoſpheric air, or other ſubſtance containing oxygen in the water. The power of action, in this caſe, appears in great meaſure proportioned to the power of the conducting ſubſtance between the plates, to oxydate the zinc. And it is reaſonable to conclude, that the oxydation of the zinc in the pile, and the chemical changes connected with it, are in ſome way the cauſes of the effects produced by it.

A new mode of conſtructing a galvanic apparatus has been adopted by Mr. *Davy*, which conſiſts in faſtening the metallic plates in pairs, by cement, and incloſing them in cement, in a proper trough, ſo that water-tight partitions are left between each pair of plates. Eighteen pairs thus diſpoſed, on concentrated nitrous acid being poured into its partitions, gave ſo ſevere a ſhock as to benumb the fingers for ſome ſeconds. An apparatus of this ſort has been conſtructed at the *Royal Institution* (where Mr. *Davy* has been lately engaged in teaching this, as well as other branches of experimental philoſophy), containing ſeveral hundred pairs of metallic plates, the effects of which equal a very powerful electrical battery. It furniſhes very viſible ſparks, and gives ſhocks that inſtantly deſtroy life in the ſmaller animals, and which are felt through a wire or chain of great length. By it, too, the gold-leaf electrometer is affected, and the leyden phial can be charged, as firſt diſcovered by Mr. *Cruickshank*, of *Woolwich*.

From what has been ſaid, therefore, it is manifeſt that the galvanic influence is, in its nature, totally independent of organized bodies, which were at firſt imagined to furniſh this principle ; at the ſame time its relation to, and even identity with, common electricity. can hardly be queſtioned. It is, however, probable, as M. *Ritter* obſerves, that a conſtant galvanization accompanies the vital proceſs in the animal kingdom ; for chemical changes are continually going on in the living ſyſtem, ſolids becoming fluid, and fluids ſolid, by conſtant oxydating and de-oxydating proceſſes. The animal body contains all the conditions requiſite for galvanic action. Theſe are, that all the links of the chain, a few excepted, ſhould be good conductors of electricity ; that they ſhould be of different qualities ; that the chain ſhould be a mixture of ſolids and fluids, and that it ſhould conſiſt of at leaſt three different matters. M. *Humboldt* aſſerts, that contractions took place on bending back the nerve of a prepared limb of a frog on the muſcles, and even when the nerve of one frog was applied to the muſcles of another. Were this clearly aſcertained, the exiſtence of galvanic changes in animal bodies would be put beyond a doubt, eſpecially when the electrical influence exerted by ſome animals, is conſidered. The experiments of M. *Humboldt*, however, are not always to be implicitly relied on.

The ſeparate production of hydrogen and oxygen gaſes, in the different legs of the ſyphon, as noticed above, tends much to ſhake the *Lavoiscrian* doctrine of the compoſition of water. The explanation of this curious fact has been attempted in different ways. Some have ſuppoſed that the galvanic action tends to deprive the water of one of its conſtituent principles, leaving the other in exceſs : of this opinion were M. *Monge*, and others of the French National Inſtitute. Again, it has been imagined that the water was decompoſed, one of the gaſes being ſet at liberty, whilſt the other, in combination with the galvanic fluid, paſſed, in an inviſible manner, to the extremity of the other wire. This opinion is ſupported by M. M. *Fourcroy*, *Vauquelin*, and others. Theſe gentlemen endeavour to explain the matter in this way : they conceive the exiſtence of a particular fluid, which they ſtyle galvanic, and which circulates from the poſitive, towards the negative ſide of the pile. According to them, this fluid decompoſes the water in its paſſage from the poſitive ſide of the pile, and the oxygen eſcapes in bubbles. But it combines with the hydrogen to form a liquid, which traverſes the water, the ſulphuric acid, or the human body (according as one or the other of theſe is made the medium of communication), in order to gain the extremity of the wire on the negative ſide : there the galvanic fluid abandons its hydrogen, and ſuffers it to eſcape in the form of gas, whilſt itſelf penetrates the wire. This explanation of the phenomenon in queſtion cannot but appear extremely forced and inadequate, to perſons who feel indifferent as to its effect on the new chemical doctrines, a regard to which, probably influenced thoſe eminent philoſophers in drawing their concluſions on the ſubject.

The third opinion that has been formed with regard to it is that of M. *Ritter*. He thinks that no decompoſition at all of the water takes place ; but that this fluid combines with a certain principle emanating from

from the *poſitive* ſide of the pile, and thus forms oxygen gas; whilſt with that iſſuing from the negative ſide, it forms hydrogen gas. Putting the French doctrines of chemiſtry out of the queſtion, the opinion that has now been mentioned is certainly not deſtitute of probability, and is conſonant with the ſpecious theory of a double electric fluid, the *vitreous* and the *reſinous*; as adopted by ſome philoſophers to explain the electric phenomena.

It will excite no ſurpriſe when we inform our readers, that the galvanic influence has lately been applied to the purpoſes of medicine; for this has been the fate of almoſt every new diſcovery in phyſics. Dr. *Grappengieſſer*, and Profeſſor *Herz*, of *Berlin*, are ſaid to have employed galvaniſm ſucceſsfully in the treatment of diſeaſes, the conſequence of palſy, or nervous weakneſs of particular parts: as deafneſs. They uſe for this purpoſe the galvanic pile.

---

§ 2. *On the Vitality of Germs.*

Dr. *Michelotti*, of *Turin*, in the *Journal de Phyſique*, *An.* 9. gives an account of a number of intereſting experiments on the effects of light on vegetation, which have led him to form ſeveral new concluſions on the ſubject. He inquires, Has light any action on the embryo ſtill contained in the egg? Is its action ſalutary, or prejudicial to it? In order to decide theſe queſtions, he encloſed a quantity of the eggs of the *phalæna dispar*, Linn. in glaſs jars, covered with a coating of black wax, permitting, at the ſame time, the free paſſage of air, but excluding, as much as poſſible, that of light, into the jars. The eggs in theſe were hatched conſiderably ſooner than in other jars, expoſed, under ſimilar circumſtances, to the influence of light. The experiment was frequently repeated with a ſimilar reſult The ſame experiment was made with the *phalæna mori* (the ſilk-worm), and the reſults were perfectly analogous to thoſe above mentioned. When the eggs of a ſpecies of ſpider were employed for the purpoſe, thoſe contained in the coated jars were ſpeedily hatched, whilſt ſuch as were expoſed to the ſun's light, all of them periſhed.

From theſe experiments, therefore, we may conclude, that light has a decided action on thoſe germs which are expoſed to it; that this action is prejudicial to them; and that it manifeſts its action by retarding their expanſion, if the light be weak, or a reflected light, and by a total extinction of their life, if it be very intenſe, as that which comes directly from the ſun. To theſe facts if we add, that the expanſion of viviparous animals begins, and is completed, in darkneſs; that oviparous animals produce eggs with an opaque ſhell; that if the eggs have a delicate ſhell, the mother generally depoſits them in dark and concealed places, where ſhe covers them with hair, earth, &c.; we ſhall be inclined to think that the action of light is generally prejudicial to the expanſion of the germs. The way in which it is ſo, the author thus endeavours to explain,

'It may be conceived that the action of light can hurt germs three different ways: either by the deſiccation it may produce, by too much heating

heating the bodies expoſed to it; or by favouring new combinations between the almoſt liquid parts of the germ,in ſuch a manner as to deſtroy their natural diſpoſition; or, in the laſt place, becauſe, being itſelf a ſtimulus, that is to ſay, an agent capable of affecting vitality different ways, it may by its intenſity, or the continuation of its action, extinguiſh the vitality, as all ſtimuli, too violent or too long continued, exhauſt the ſubject on which they act.

'It may be readily ſeen, that the firſt hypotheſis, that of the deſiccation produced by the light of the ſun, is void of all foundation, as is proved by the black jars expoſed to the north, and the tubes which were kept in water.

'In regard to the influence which light may have on germs, by facilitating or producing new combinations, it certainly deſerves to be examined. It may, indeed, be eaſily conceived, that a new diſpoſition of the parts, contrary to that which is neceſſary for the exerciſe of life, cannot take place without deſtroying it; and we know, by the different experiments of Hunter, how much power the vital principle has to cauſe the germs of the eggs of fowls (which are eaſily injured by the froſt, when the vital principle is deſtroyed) to reſiſt cold with efficacy.

'Harvey, and ſeveral other philoſophers, have alſo obſerved, that the egg will keep as long as the membrane which contains the germ is ſound; and various obſervers have remarked, that the vital principle can even make the ſeeds of certain plants reſiſt the injury of ages.

'Inſects, which are ſuſceptible of a kind of reſurrection, are ſo only as long as the vital principle exiſts in them, by the means of which they reſiſt the agency of deſtructive powers; but, if theſe powers derange the organization, they irrecoverably loſe the faculty of reſuming new life. That is to ſay, in theſe animals, as in germs, the vital principle is always eſſentially united to a certain diſpoſition of organization, which is not changed till after the deſtruction of the vital force.

'It appears to me, that light deſtroys the vital principle of germs, and that after its deſtruction new combinations are formed.

'The colour, indeed, which the eggs aſſumed during my experiments, never manifeſted itſelf without the deſtruction of life, and it never ſhewed itſelf till the light had exerciſed on them a pretty ſtrong action.

'The total exhauſtion of vitality, effected by light, ought not to be different from that effected by other ſtimuli, that is to ſay, light weakens the germ, and conſequently retards its expanſion: in a word, by weakening and exhauſting it, it extinguiſhes its life; which is perfectly agreeable to what we have obſerved in eggs retarded in the proceſs of hatching, or which periſhed, according to the intenſity of the light they had received.

'It may be conjectured, that the light affects chiefly the nervous ſubſtance of the tender embryos, becauſe, we know the vehemence with which it affects, and in a very ſevere manner, our retina, when its action on it is too long continued. The exiſtence of the pupillary membrane in the fœtus, and the pain experienced by young animals when

when firſt expoſed to the light, are further proofs in favour of this hypotheſis. In my eggs, I could diſcover on the head of the inſect, thoſe two hemiſpheres, with facets, which afterwards formed the eyes of the inſect; a proof of their organization.

'However plauſible this reaſoning might be, I was deſirous of putting it to the teſt of experiment. As vegetables have no nervous ſubſtance deſtined for feeling, they appeared to me proper for this purpoſe. I therefore took french beans *(phaſeolus vulgaris, Linn.)*, chick peas *(cicer arietinum)*, lupines, *(lupinus albus)*, and moiſtened them until they began to ſhow ſigns of germination. I then removed the bark, and put them thus peeled into glaſs tubes with a little water. I immerſed theſe tubes in a bottle of very thin tranſparent glaſs filled with water; ſome of the tubes I had wrapped up in a plate of lead, to ſhelter them from the light of the ſun, and they were all kept at the ſame temperature. I firſt obſerved in all the tubes a more rapid germination; I ſaw the ſeeds in the tranſparent tubes become equally yellow, but afterwards they began to putrefy, without any further ſign of vegetation: on the other hand, the ſeeds contained in the tubes darkened by the plate of lead, became yellow alſo; but, aſſuming afterwards a darker colour, they in a little time became green, threw out roots, expanded their cotyledons, and appeared in full vegetation. As the ſmallneſs of the tubes did not permit them to expand more, as ſoon as they filled the whole capacity of them they ceaſed to vegetate.

'The different degrees of vegetation to which theſe ſeeds attained, ſhowed that light may have an influence on the ſeeds of vegetables, though deſtitute of nervous ſubſtance; but, that I might be fully convinced of this fact, I proceeded in the following manner:

'I put ſome ſeeds of lupines and chick peas, freed from their bark, and in a ſtate of germination, into two bottles, furniſhed at the bottom with a little tow moiſtened with water. I removed from the coated bottles a little of their varniſh on one ſide, in order that, being illuminated in that part, I might be able to obſerve through the aperture the vegetation of the ſeeds without being obliged to take them out.

'The ſeeds at firſt continued to vegetate equally in the two bottles, and to throw out roots; but I ſoon obſerved that the extremity of the ſmall roots of the ſeeds contained in the tranſparent bottle began to aſſume a colour more and more dark, and they at length putrefied altogether. As ſome expanſion of the germ of the plant took place at this period, at the expence of the cotyledons, and as the latter were moiſtened, ſo it happened that the expanſion of the germ did not totally ceaſe, though it was very ſlow. The principal root even threw out ſmall roots: but they ſoon rotted with the reſt; ſo that, after having languiſhed ſome time, the vegetation ceaſed altogether.

'In the varniſhed bottle the caſe was different: all the ſeeds vegetated completely, ſent forth numerous roots in the tow, and only two ſeeds gave any ſigns of putrefaction at the extremity of their principal root; while in the other parts they were ſound and vigorous; ſome of the plants even roſe to the ſummit of the bottle: in a word, I did not ſee any difference between theſe plants and thoſe which vegetate naturally in

in the earth, except that those in the dark bottle had the stem and small roots longer and whiter, and the cotyledon greener.

'From these observations there is reason to conclude, that if philosophers have been long acquainted with the influence of light on vegetation, they knew but imperfectly that the first degree of vegetation, that is to say, the expansion of the germs of plants, requires obscurity, like that of the germs of animals; since light is evidently prejudicial to them.

'If we recollect that the seeds of vegetables are all covered with a pretty hard opake bark, we shall be inclined to believe that this bark is not only destined to defend them from the prejudicial influence of the air, gases, &c. but also to shelter the tender and sensible germ from the action of the solar light, which would make them perish.'

---

§ 3. *Of the Citric Acid.*

The late successful employment of the *Citric Acid*, or concrete acid of Lemons, as it is now termed in the shops, as a substitute for the fresh juice of the fruit, in the treatment of scurvy, and other diseases, renders its preparation an interesting point for investigation. The following remarks, therefore, will not be unwelcome to the medical reader.

Various attempts have been made to preserve the juice of lemons and limes in a state fit for use, in order to have a remedy at hand, of the most powerful kind, for the cure of the scurvy, so destructive to mariners in long voyages. With this view, the admixture of alkohol with the juice has been tried, for the purpose of coagulating and precipitating the mucilage it contains; separating the spirit afterwards by distillation. It has been found impossible, however, by these means, to separate entirely the mucilaginous and extractive matters, which dispose the liquor to fermentation; and after exposure to heat, the flavour is always found materially altered. The concentration of the juice by freezing is not more successful. This process neither destroys the mucilage, nor the extractive matters; and the liquid remaining is still liable to fermentation in a warm temperature. The method of *Scheele*, therefore, is the only one known, by which the foreign matters in combination with it can be got rid of, and the acid procured in a separate and pure state. This consists in saturating the acid with mild calcareous earth, and decomposing the citrate of lime, thus formed, by means of the sulphuric acid. The method of effecting this, recommended by *Scheele*, is the following:

Four ounces of white chalk, with a pint of water, are heated in a vessel of silver or pure tin. This is saturated by adding gradually the fresh juice of lemons, as long as any effervescence takes place. This being done, about an ounce more of the juice is added, in order to ensure the complete saturation of the earth. The whole quantity of juice requisite for this purpose is found to be about 94 ounces. The mixture being suffered to cool, the supernatant liquid is poured from the citrate, which occupies the bottom of the vessel. The citrate is then washed three or four times with cold water, for the purpose of separating

parating any adhering extractive matter. By this process, 7 ounces and half a drachm of citrate of lime is procured, of a white colour, and light powdery form.

By evaporation of the liquid, and the different washings, about $3\frac{1}{2}$ drachms more of the citrate may be procured, making in the whole 7 ounces and a half, or 60 drachms. Of these, $17\frac{1}{4}$ drachms will consist of calcareous earth, or lime, and $41\frac{1}{4}$ of citric acid; the remaining two drachms are a portion of argil, mixed with the chalk and water; or, in round numbers, 100 parts of citrate of lime will consist of lime 30, citric acid 70.

The citrate of lime is very sparingly soluble in water, and has no particular taste: its lime is precipitated by the oxalate of potash, and by the oxalic acid. The calcareous citrate kept under water, and exposed to the sun during the heat of summer, putrefies; the water becomes covered with an earthy crust, which is carbonate of lime. Like other vegetable acids, the citric is destroyed by putrefaction. Its carbonic matter, reunited to the oxygen of the decomposed water, and transformed into an acid, reproduces the chalk. During the putrefaction, a continual discharge of bubbles takes place, which can be no other than carbonated hydrogen gas.

In order to dislodge completely the citric acid contained in four ounces of the citrate, 20 ounces of dilute sulphuric acid are required, of the standard of nineteen degrees of Beaumè's hydrometer.—An acid of this standard may be formed by mixing 3 parts of water with one of the sulphuric acid, or the oil of vitriol of commerce. The citrate of lime is boiled with a pint and a half of water, and the sulphuric acid added. After suffering the mixture to boil for a quarter of an hour, stirring it frequently, the whole of the citrate is found changed into sulphate of lime. The mixture being filtered through paper, is suffered to evaporate, that the dissolved sulphate may be deposited: this evaporation and filtration it is necessary to repeat 3 or 4 times, in order to get rid completely of the calcareous sulphate. The process may be expedited, in cases where it is required to have the acid in a state of perfect purity, by mixing the liquor, evaporated to the consistence of a syrup, with a quantity of alkohol, which at once precipitates the whole of the calcareous sulphate.

To procure the crystallization of the acid, it is necessary, that the evaporation be carried to such a point, that the liquor acquire the consistence of a thick syrup; as this acid admits of a very small quantity of water in the formation of its crystals. By a second evaporation and crystallization in this way, nearly 20 drachms of crystals may be obtained, a small quantity remaining behind in the mother-liquor. In the preparation of the acid it is particularly necessary to avoid the use of the common glazed earthen vessels, on account of the lead that the glazing consists of. The Dutch ware, however, may be safely employed, as in these the glazing is vitrified to a degree not capable of being acted upon by the acid.

M. *Proust* conceives it probable, that the juice of lemons might be preserved, by first subjecting it to the vinous fermentation, by the addition of

of a ſmall quantity of ſugar, and puſhing the fermentation to the *maximum* of aceſcency. In this way, he thinks, the citric acid would be deprived of the chief part of the mucilage and extractive matters that contaminate it, without having itſelf undergone any material change in its properties. This, however, can only be aſcertained by experiment. The acetous acid has not been found a remedy to be relied on in ſcurvy.

In preparing the citric acid, M. *Prouſt* cautions us againſt an exceſs of ſulphuric acid, which, becoming concentrated by evaporation, re-acts on the citric acid, ſeparates its carbonic principle, and prevents the formation of cryſtals. In order to avoid this, a ſmall quantity of chalk ſhould be thrown into the mixture whilſt hot, and the liquor then filtered, to ſeparate the ſulphate of lime thus formed.

---

§ 4. *Of the Vaccine Pock.*

Dr. *De Carro*, of *Vienna*, in a letter to Dr. *Pearſon*, on Vaccine Inoculation, makes ſeveral remarks on the ſubject of an intereſting nature. His obſervations confirm thoſe of Dr. Pearſon on the inefficacy of a cow-pock that comes too rapidly to its height, and which does not follow the ordinary laws of that diſeaſe. On the 3d or 4th day, a ſlight elevation and redneſs ſhould be perceived; theſe increaſe in a veſicular form till the 12th or 13th day, and the veſicle contains always the moſt limpid fluid: a fever comes on, on the 8th or 9th day, or ſometimes is not perceptible: the beautiful areola appears on the 7th day, and increaſes till the cruſt is entirely formed; this cruſt begins commonly on the 12th day, and becomes quite black. He has had two caſes where the children were already infected with the ſmall-pox at the time of the vaccine inoculation, and where it ſhewed itſelf, as uſual, without interrupting in any degree the courſe of the cow-pock. The mildneſs of theſe, with ſome ſimilar caſes in England, give reaſon to believe that the cow-pock can render the ſmall-pox milder when they attack the ſame ſubject together. In two perſons who had previouſly gone through the ſmall-pox, vaccine inoculation was performed, but in neither of them did the appearances of the true and uſual cow-pock puſtule follow.

The diſtinct nature of the variolous and vaccine diſeaſes is further proved by a caſe communicated to Dr. *Pearſon* by Mr. *Branſon*, ſurgeon of *Doncaſter*, who has practiſed the new inoculation to a conſiderable extent, and with uniform ſucceſs. A child was inoculated for the cow-pock, after it had been for ſome days expoſed to the contagion of the natural ſmall-pox. The arm went on in the uſual way till the 6th day, when fever came on, and the next day the ſmall-pox appeared. The eruption was confluent, and particularly ſo about the inoculated part. On the 11th day from the vaccine inoculation, and the fifth of the variolous eruption, Mr. B. inoculated a child from the cow-pock puſtule, ſurrounded by a cluſter of ſmall-pox; in ſhort, they appeared ſo blended, that he doubted whether the matter he obtained was that of the cow-pox, or mixed with ſmall-pox: it did not appear ſo limpid as it uſually does in the cow-pock. It produced, however, the genuine cow-pock, without other appearance.

5. The

§ 5.

The Medical Committee for the Vaccine Inoculation, at Paris, has lately publiſhed the following notice:

"The Committee has juſt inoculated ſome cows with the vaccine matter. This experiment has ſucceeded. The puſtules appeared in the moſt regular manner, and followed the ſame progreſs as in man. The Committee will ſpeedily publiſh a detailed account of this noble experiment, which had been before tried at *Rheims* with full ſucceſs. A great many medical men and curious perſons came to be convinced, by ocular demonſtration, of the truth of this fact, ſo intereſting in the hiſtory of the vaccine."

---

§ 6. *Of the State of Medicine among the Burmas, a Nation inhabiting a Diſtrict in the Eaſt-Indies*, by Francis Buchanan, M. D. (From *Aſiatic Reſearches*, vol. 6.)

Superſtition, and a fondneſs for the marvellous, have, at all times, characterized the rude and uncultivated ſtate of mankind. The belief in ſupernatural agency always accompanies ignorance, and begets a fondneſs for the arts of magic and divination. Amongſt the *Burmas*, divination is conſidered as the moſt uſeful and noble of ſciences. "No perſon," the author obſerves, "will commence the building of a houſe, a journey, or the moſt trifling undertaking, without conſulting ſome man of ſkill, to find a fortunate day or hour. *Friday* is a moſt unlucky day, on which no buſineſs muſt be commenced. I ſaw ſeveral men of rank, who had got from the king ſmall boxes of *theriac*, or of ſomething like it, and which they pretended would render them invulnerable. I was often aſked for medicines, that would render the body impenetrable to a ſword or muſket ball; and on anſwering that I knew of none ſuch, my medical ſkill was held in very low eſtimation. Indeed every *Burma* doctor has at the end of his book ſome charms, and what are called magical ſquares of figures, which he copies, and gives to be worn by his patients. And although theſe ſquares are all of uneven numbers, and conſequently of the eaſieſt conſtruction, yet the ignorant multitude repoſe great confidence in their virtue. Some men whom we ſaw, had ſmall bits of gold or jewels introduced under the ſkin of their arms, in order to render themſelves invulnerable: and the tatooing on the legs and thighs of the *Burma* men, they not only think ornamental, but a preſervative againſt the bite of ſnakes. Almoſt every man of any education pretends to a ſkill in chiromancy, or the foretelling of a perſon's fortune by looking at the palms of his hands. Prophecies and dreams are alſo in great credit among the *Burmas*, as amongſt all rude and ignorant nations

"On Medicine, the *Burmas* have ſeveral books. They divide diſeaſes into ninety-ſix genera, and of theſe ſeveral are ſubdivided into many ſpecies. Their books contain deſcriptions of all the ninety-ſix diſeaſes, with various recipes for their cure. Of the animal kingdom, mummy is a favourite medicine. The Burmas are acquainted with the uſe of mercury, in the cure of the venereal diſeaſe: but their manner of giving it is neither certain nor ſafe. They make a candle of cinnabar,

bar, and ſome other materials, and, ſetting fire to it, the patient inhales the fumes with his noſtrils. The patient is, however, rarely able to perſevere long in this courſe, as it always produces a want of appetite and extreme languor. The greater part, however, of the *Burma* remedies are taken from the vegetable kingdom, eſpecially of the aromatic kind, nutmegs being one of their moſt favourite medicines. They are all well acquainted with the plants of their country, and for a vaſt number have appropriate names. On the whole, however, the practice of their phyſicians is almoſt entirely empirical; and almoſt every one has, or pretends to have, a number of private recipes, on which the ſucceſs of his practice chiefly depends. I was often tempted by wonderful ſtories concerning the efficacy of theſe noſtrums, in order to induce me to purchaſe the ſecret, which ſome of them pretended to have been handed down from their fathers for ſeveral generations. Indeed I found a great ſpirit of illiberality among my brethren of the trade; nor were they exempt from impoſing on the weakneſs of the ſick, by a pretenſion to ſupernatural powers. In ſpite, however, of all theſe indirect means of influence, I found them deſervedly not in poſſeſſion of an honourable eſtimation among their countrymen. One curious cuſtom relating to the *Burma* phyſicians may be mentioned. If a young woman is dangerouſly ill, the doctor and her parents frequently enter into an agreement, the doctor undertaking to cure her. If ſhe lives, the doctor takes her as his property; but if ſhe dies, he pays her value to the parents: for in the *Burma* dominions, no parent parts with his daughter, whether to be a wife, or to be a concubine, without a valuable conſideration. I do not know whether the doctor is intitled to ſell the girl again, or if he muſt retain her in his family; but the number of fine young women, which I ſaw in the houſe of a doctor at *Myeda*, makes me think the practice to be very common.

"In ſurgery, the ſkill of the *Burmas*, I believe, goes no farther than dreſſing wounds, and ſetting bones. Of late, indeed, they have introduced from *Arakan* the art of inoculation for ſmall-pox. This practice, has, however, not become general, as a very great proportion of the people's faces are pitted by that diſeaſe."

---

§. 7. *On the Adheſion or Attraction of Surfaces.*

M. *Carradori*, a celebrated Italian philoſopher, has made a number of curious obſervations on the ſpontaneous diffuſion of oily and other ſubſtances on the ſurface of water. He remarked, that oily and gum-reſinous fluids diffuſe themſelves rapidly over water, in the form of exceedingly fine membranes; in like manner, pulverized ſubſtances, that abound with oil, as reſins and gum-reſins, exhibit a ſimilar appearance. When theſe ſubſtances have occupied a given ſurface of water, without regard to the quantity or height of the column of fluid, the expanſion neither increaſes nor diminiſhes. If matters thus diffuſible on the ſurface of water are preſented in too great quantity, the ſurface once ſaturated, refuſes the ſurplus, which, being no longer attached to the water by the attraction in queſtion, ſwims in globules, or is precipitated, according to its weight. The quantity and the promptitude with which the

the ſubſtances expand themſelves, are always in proportion to the ſurface of the water on which they are thrown; thus a drop of oil diffuſes itſelf ſlowly over the water of a narrow veſſel: on the contrary, if the veſſel is large, the diffuſion takes place very rapidly.

After having thrown a drop of olive oil on the ſurface of water contained in a ſmall veſſel, if we add a portion of the juice of the milk-thiſtle, or a pinch of flour or meal, theſe latter ſubſtances drive off the oil, and occupy its place. In this experiment, the attraction of ſuperficies of the water with the oil, is deſtroyed; the oil. obeying only the force of coheſion, retires to the borders of the veſſel in the form of minute ſpheres. The order in which this phenomenon takes place with different ſubſtances, is as follows: fixed oils, meal of grain or legumes, volatile oils, milky juices of plants, eſpecially of the tithymalus, or milk-thiſtle.

From theſe facts, M. *Carradori* infers, that adheſion is not, as *Morveau* ſuppoſes, the firſt effect, or the firſt degree of chemical affinity; becauſe oil, which has no chemical attraction or affinity with the maſs of the water, has nevertheleſs an attraction to its ſurface, over which it diffuſes itſelf ſo rapidly.

---

§ 8. *Curious Fact in Natural Hiſtory.*

The operation of caſtration has lately been performed on one of the three young lion-whelps lately brought forth at the Muſeum of Natural Hiſtory in Paris. Choice was made of the one for the purpoſe, which appeared to diſcover the moſt ferocious diſpoſition. It is preſumed this is the firſt time of making ſuch an experiment on this claſs of animals.

---

§ 9. *On the Influence of Light on certain Plants.*

M. *Decandolle* has lately publiſhed in France, a memoir, containing an account of various experiments made by him, for the purpoſe of aſcertaining the influence of light on different vegetable phenomena, as etiolation or blanching, emiſſion of oxygen gas, the power of ſuction in branches, and particularly on the ſleep and watching of plants. The experiments recited were made at the Muſeum of Natural Hiſtory, comparatively in the open air, and in two caves having no other opening than the entrance. One of theſe was heated by means of a ſtove; the other was illuminated by lamps affixed to the walls, and the whole of which afforded a light, by computation, equal to 54 ordinary wax-candles.

Seeds of different plants, as the creſſes (*lepidium ſativum,* and *ſinapis alba)* grew as readily in the illuminated cave, as in the open air; the leaves were likewiſe green, and not etiolated, as in plants growing in the dark: the green colour, however, was hardly as deep as in thoſe expoſed to the light of the ſun. The author was next curious to inquire, whether artificial light, like the ſolar, occaſioned the eſcape of oxygen gas from plants. In order to this, he placed ſome leaves of the *eucomis punctata* and of *lycium barbatum* in glaſſes filled with water and inverted on plates, and expoſed them to the light of the lamps. They did not begin to furniſh gas till after expoſure for 24 hours; whereas, in the ſun's

 light,

light, the extrication begins in the ſpace of half an hour. The gas thus obtained, on being ſubmitted to examination, by M. *Vauquelin*, by means of phoſphorous, gave only $\frac{2}{100}$ of oxygen gas; all the reſt was azote or carbonic acid—Branches of *phyllirea media*, of *ſempervivum arboreum*, and of *ariſtolochia ſipho*, were expoſed to the ſame trial, but gave out no gas whatever. Theſe experiments prove that the light of lamps, however intenſe, though ſufficient to give a green colour to the leaves of plants, is yet not powerful enough for the developement of oxygen gas.

The next part of the inquiry relates to the ſleep of plants. It is known that the flowers of a great number blow and cloſe themſelves pretty regularly at certain hours; that theſe periods are not the ſame in different ſpecies; and that the leaves during the night preſerve a different poſition from that which they aſſume by day. The experiments of M. *Decandolle* ſhew, that light exerts a very conſiderable influence on theſe operations. In ſome plants, by expoſure to artificial light, the movements which uſually take place at night were prevented, and their habits in this reſpect entirely changed. In others, little or no effect was produced by the ſame means. The flowers of the *nightſhade*, expoſed to the continued light of the lamps, opened at night rather ſooner, and cloſed ſomewhat later, than in common. The ſame took place in continued darkneſs. The author tried if it were poſſible to change entirely their hour of ſleep. With this view the lamps were lighted for three ſucceſſive days at 8 o'clock in the evening, and extinguiſhed at ſix in the morning. The firſt night, the plants flowered at night as uſual; but the two following days they flowered in the morning, and did not cloſe again till the evening, at the inſtant they were illuminated by the lamps; directly the reverſe of what takes place when expoſed to the open air.

The flowers of the *ornithogalum umbellatum*, which open every day about eleven o'clock, and cloſe at three in the afternoon, being placed in the dark when open, immediately cloſed; expoſed again to the light of the ſun, they opened anew; and this repeatedly. The *anthemis maritima*, which keeps its flowrets cloſed during the night, conſtantly opened them on expoſure to the light of the lamps.

The leaves of the greater number of plants, at ſun-ſet, aſſume a poſition which they preſerve till morning. The author's experiments prove, that if *Light* exerts ſo decided an action on the generality of plants, there are ſome which appear inſenſible to it. The habits of the *oxalis incarnata*, and *oxalis ſtricta*, were not at all changed by continued expoſure to the light of the lamps for ſeveral days. The *mimoſa pudica*, the common ſenſitive plant, ſubmitted to ſimilar trials, gave a widely different and curious reſult. Two of theſe plants were expoſed, at 8 in the evening, their leaves being cloſed at the time, to the continued action of the lamps. They opened at two in the morning, one hour and a half before the plants remaining in the green-houſe, and cloſed at three in the afternoon: on the following day they opened at midnight, and ſhut at 2 in the afternoon. Two other ſenſitive plants were placed in the cave, which was darkened through the day, and enlightened at night. They changed inſenſibly their hour of ſleep, and on the 3d day, opened at

at night and cloſed in the morning. On being afterwards expoſed to the open air, they gradually reſumed their former habits. It is a fact that merits notice, that the leaves of the oſcillating plant inhabiting the borders of the Ganges, the *Hedyſarum gyrans*, continue their movements through the whole night, the ſame as by day.

The experiments, of which a ſmall part has now been noticed, prove ſatisfactorily, in the author's opinion, that the mechanical explanation which has been given of theſe curious phenomena, is wholly inſufficient, and that they are referrible only to the organization and life of the plant. The name *irritability*, by which theſe phenomena are deſignated, appears to him fully applicable, though not to be confounded with the irritability of animals: particularly as the terms fecundation, male, female, glands, marrow, &c. have been given to certain organs and functions of plants, though we know, at the ſame time, that they bear a very remote relation only to thoſe of animals.

§ 10. *Suſpended Animation of Plants.*

It has been obſerved that various kinds of moſſes that grow on walls and houſe-tops, although dried by the heat of ſummer ſo as to become quite friable, recover their former verdure and vegetative power by the firſt ſhowers of autumn. A fact analagous to this, and which is a ſtriking example of ſuſpended animation in plants, has been lately obſerved by Mr. *Gough*, of *Kendal*, in Yorkſhire (*Nicholſon*'s Journal). Some plants of *lemna minor* (common duck's meat) were collected from a pond in July 1797, dried for four or five hours in the ſun, and preſerved in a ſmall box, to the end of March 1800; they were then placed in a glaſs jar with water, and not only revived, but flowered in the following Auguſt.

§ 11. *Decortication of Trees.*

It is very generally ſuppoſed, that trees are infallibly killed by ſtripping them of their bark: yet Dr. *Mitchill*, of *New York*, in a late number of the *Medical Repoſitory*, aſſerts, on the authority of ſome New York farmers, as well as on his own obſervation, that apple trees may be decorticated with impunity in the middle of ſummer. By this operation, according to the American farmers, the trees are made young again, perhaps by the removal of the inſects which harbour under the old bark. A tree peeled by Dr. *M.* in the ſummer of 1798, remained uninjured by the ſucceeding winter, though a ſevere one. Another, which was ſtripped in June 1799, had completely re-produced its bark before September, while a large crop of fruit, that it was bearing at the time, did not appear to be in the ſmalleſt degree injured.

§ 12. *Of the Influence of Soils on Vegetables.*

M. *de Sauſſure*, jun. has made many curious experiments on the influence which various ſoils poſſeſs on the conſtituent principles of plants. It is known that certain plants prefer a granitic ſoil, and others a calcareous one. M. *de S.* endeavoured to diſcover the cauſe of this difference by analyſis. Calcareous mountains, he obſerves, furniſh

plants

plants containing a greater quantity of calcareous earth than granitic mountains; whilſt theſe give plants more highly charged with ſilex. There are, however, certain principles of thoſe plants which do not belong to the ſoil. Thus plants growing in pure granite contain much carbonate of lime, amounting even to thirty per cent. Hence it may be concluded, that the conſtituent principles of vegetables are derived partly from the atmoſphere, and partly from the ſoil in which they vegetate.

§ 13. *On the Quantity of Carbon in the Blood.*

M. *Abildgaard*, Secretary to the Literary Society of *Copenhagen*, has attempted to aſcertain the quantity of carbon exiſting in the blood. He found that an ounce, or 480 grains, of venous blood of the horſe, dried and decompoſed in a cloſe veſſel, furniſhed 115½ grains of carbon. The ſame quantity of arterial blood gave only 87½ grains of this principle. It required 148 grains of carbon of venous blood in order to decompoſe 480 grains of nitre; whilſt of the carbon furniſhed by arterial blood, 119 grains ſufficed for the ſame purpoſe. The carbon of arterial blood is lighter than that of venous blood.

§ 14. *On the internal Uſe of Laurel Water.*

In the preſent rage for employing the moſt active and poiſonous ſubſtances in the practice of medicine, it is not ſurprizing that the laurel water ſhould be added to the number. The *Med. and Phyſ. Journal* for the laſt month contains a communication on this ſubject by Dr. *Rogers*, who obſerves, that he had witneſſed the exhibition of this medicine in the caſe of a lady fifty-five years old, who had been ſubject, for a conſiderable time, to violent ſpaſmodic affections of the inteſtines, heart, and other organs, the conſequence of ſuppreſſed periodical diſcharges of blood from the hæmorrhoidal veſſels. The doſe of the laurel water directed to be employed was ten drops, in mint water, three times a day: but the two firſt doſes producing a moſt copious perſpiration, its further uſe was ſuſpended. From the time the ſweating began, however, the patient was greatly relieved; in a ſhort time all the ſymptoms diminiſhed; and, in a few days, ſhe was reſtored to her accuſtomed ſtate of health.—No mention is made of the ſtrength of the water employed, a point of much importance, as the degree of impregnation of the ſimple diſtilled waters is liable to vary greatly, according to the quantity of the herb employed in the proceſs of diſtillation.

§ 15. *Of the Uſe of Yeaſt in Typhus.*

The ſame *Journal*, and alſo many of the preceding numbers, contain accounts of the wonderful efficacy of yeaſt in the treatment of the worſt caſes of typhus fever. The evidence adduced on the ſubject, however, is far from concluſive; and we can ſtate, on the combined authority of numerous practitioners, that this remedy has appeared, in their hands, totally inert. The facts brought forward in its favour, indeed, ſeldom go to prove more than this—the remedy was adminiſtered, and the patient recovered.

§ 16.

§ 16. *On the Plague.*

It is very rare that this diſeaſe occurs to Britiſh practitioners, and neither its nature nor treatment are well underſtood. The late expedition to the coaſt of Egypt has furniſhed an opportunity of ſubjecting it to the effects of the modern herculean remedies, adapted to the ſtate of typhus fever, to which the plague ſeems not remotely allied.—The communication is from Dr. *Blāne*, one of the commiſſioners of ſick and wounded ſeamen. 'In the ſpring and ſummer of 1799,' Dr. *B*. obſerves, 'the plague prevailed in Syria, and was communicated to ſome of the Britiſh ſhips of war employed on that coaſt, particularly at the celebrated ſiege of St. Jean D'Acre. An account of ſome of theſe caſes was ſent by Mr. Tainſh, ſurgeon of the Theſeus, a ſeventy-four gun ſhip, to the commiſſioners of ſick and wounded ſeamen; and as there ſeems to be no doubt that theſe were caſes of the true plague, from the deſcription, as well as from the exiſtence of it on the ſpot at that time, as opportunities of obſerving it rarely occur to practitioners of this country, and as it was ſucceſsfully treated by powerful medicines, theſe caſes ſeem deſerving of being communicated to the public, particularly at this moment, when the defenders of our country are expoſed to that dreadful malady in Egypt.

'The greater part of the ſymptoms enumerated are ſuch as might occur in a violent fever; but the buboes which were obſerved in the axilla in three caſes, and in the groin in two caſes, out of the five which occurred, ſerved, in conjunction with the other ſymptoms, to characterize and aſcertain the diſeaſe. The moſt remarkable ſymptoms beſides theſe were violent vomiting, *petechiæ*, ſwelled tongue, redneſs of the eyes, ſevere head-ach, and great debility; rigors, foul tongue, and the other concomitants of fever alſo attended it. But it will be more ſatisfactory to give the moſt intereſting and inſtructive parts of Mr. Tainſh's narrative in his own words.

"The firſt caſe was that of Colonel Philipeaux, a French officer, acting under the orders of Sir Sydney Smith, at the ſiege of Acre. He was always fearful of the plague, and dreaded much the touch of any Turk, which kept his mind in a ſtate of continual anxiety. When ſeized with the diſeaſe he would take no medical advice, but drank copiouſly of lemonade. He died the fourth day of his illneſs by a hæmorrhage from the bowels, with other ſymptoms of a moſt ſevere fever. His bed and bedding were thrown overboard with him, and every precaution was taken to fumigate and cleanſe the captain's cabin where he died.

"No other caſe occurred till we took ſeveral French boats off Jaffa, with wounded and ſick men, after their departure from the ſiege of Acre. Thoſe apparently in health, particularly the ſeamen, were ordered on board the Theſeus, and one of them was ſeized with the ſymptoms above deſcribed, which in twenty-four hours were followed by buboes and extreme debility. Having at that time no ſick, I removed him to the ſick birth, ordered every part of his cloaths off, and himſelf to be waſhed from head to foot with ſoap and warm water, after which his head, arm-pits, and pubis were ſhaved. He was furniſhed with a clean

bed, linen, and night-cap, and all his former cloathing was thrown overboard. I then gave him an emetic, conſiſting of half a drachm of ipecacuanha, and a grain and a half of tartar emetic; which not having operated freely, it was repeated in three hours, and he diſcharged an enormous quantity of bile, viſcid ſordes, and tough phlegm. I next gave him ten grains of calomel and ſix grains of antimonial powder, and repeated them in four hours; he had, at the ſame time, a laxative clyſter, which procured him ſeveral ſtools that ſeemed to give him much relief. He reſted pretty well; and having ſome fever next day, the antimonial was continued. Towards the evening he had an exacerbation, attended with delirium, which left him after the application of a bliſter to the head. He now complained of a bitter taſte and nauſea, with great proſtration of ſtrength. I gave him a ſcruple of ipecacuanha and two grains of tartar emetic, which cleared the ſtomach of a large quantity of diſagreeable matter, which gave him great eaſe. As he was now free from fever, I determined to give him the Peruvian bark, which was mixed with Port wine, and he took it with much pleaſure, making ſigns for more. In an hour I let him drink half a pint of Port alone, which pleaſed him much; and after this he ſlept above three hours. On waking he was much refreſhed. At bed-time I gave him ſix grains of camphor and two of opium, which procured him a good night, and next day he was greatly better. As he expreſſed much inclination for wine, I gave him ſome of the red wine with bark infuſed in it; but he preferred the wine by itſelf, which was very good, and by promiſing him plenty I prevailed on him to take the infuſion alternately with it, regulating the quantity according to his ſenſations.

"The buboes continued ſtationary during the early part of the fever; but as ſoon as he began to take wine and nouriſhment, they aſſumed an inflammatory appearance, with excruciating pain. I ordered warm fomentations and emollient poultices, and he took an opiate at bed-time. As theſe poultices did not ſeem to aſſiſt maturation, I ordered others, conſiſting of ſoap, aſſafœtida, and onions chopped ſmall, which had the deſired effect in bringing them to ſuppuration. I opened them with the lancet; the matter was of a thin ſanious nature. The poultice being continued, the glands in a cluſter protruded through the opening, without any ſuppuration having taken place in their ſubſtance. I cut them away, and dreſſed the ſore with an ointment compoſed of yellow baſilicon, mercury and turpentine, applying the emollient cataplaſm over all; and, in a few days, a good pus was produced. He gathered ſtrength daily, ſometimes drinking wine as far as two quarts, ſeldom leſs than three pints, in a day; he had alſo as good a diet as the ward room table could afford. The cure was ſoon compleated, much to my ſatisfaction, and he returned ſome time after to France in perfect health.

"The third caſe was that of a ſeaman, who was ſent from the Theſeus on board of a gun-boat. Having communication with the French boats which we took, and having drank a large quantity of ſpirituous liquor, he was brought on board in a ſtate of low delirium, his tongue being ſwelled and protruded, his ſkin being dry, and his mouth parched; he had alſo a burning ſenſation over the whole body, with ſwellings in the

the arm-pits, *petechiæ*, and univerſal debility. I could not get him to ſwallow any thing, and he died in twenty-four hours.

" The fourth caſe was that of our ſhip's corporal, Matthew Garland, who had been on board a large boat lying along-ſide, to diſtribute wine and bread to ſome ſick and wounded Frenchmen; their wounds had not been dreſſed for three days; they were dreſſed in the boat, and ſupplied with more dreſſings. This man was ſeized with giddineſs and reeling, as if drunk, his eyes rolling, and his tongue ſwelled, protruded, and foul; he had alſo nauſea and retching, violent head ach, ſhivering, and extreme debility. All his cloaths and bedding were thrown over board, himſelf waſhed well with ſoap, warm water, and vinegar, and ſhaved, as mentioned in the ſecond caſe. An emetic was adminiſtered, and repeated three times in the courſe of twelve hours, which evacuated bile with a mixture of phlegm. At night, after the third emetic had operated, I gave him ten grains of calomel and eight of antimonial powder, and next morning rhubarb with infuſion of ſenna, tamarinds, and cream of tartar, which produced vomiting and purging, after which ſucceeded a favourable change in all the ſymptoms, except in the bubo which was ſituated in the left groin, attended with great pain. I gave him bark, antimonials, wine, vitriolic æther with opium, at bed-time, and treated the bubo as in the ſecond caſe. The wine, bark, æther, and opium were continued, particular attention was paid to the ſtate of the bowels, and with theſe remedies and a good diet he ſoon recovered.

" The fifth caſe was that of a Frenchman. After taking emetics, calomel, and rhubarb, which operated freely, he was ſent on ſhore to Alexandria, and I learned afterwards from a French officer that he recovered."

' Mr. Tainſh obſerves at the concluſion of his letter, that the only precaution he ever took againſt infection was, previouſly to touching the perſon, to rub his hands ſlightly over with olive oil, and on leaving the ſick-birth, to waſh it off with warm vinegar, water and ſoap.

' Though it is to be regretted that there are ſome points of importance, which have been omitted in the narrative of theſe caſes, ſuch as the interval between the time of receiving the infection and the appearance of the diſeaſe; the particular day of the diſeaſe on which certain ſymptoms aroſe, on which certain remedies were employed, and on which death took place; and though the treatment of the local complaint may appear to ſome not agreeable to the rules of correct ſurgery, yet there are other points ſo inſtructive and novel, as to render this communication very intereſting.

' Though the caſes are not ſufficiently numerous to be conſidered as the grounds of an eſtabliſhed practice, yet it muſt be confeſſed that the method of cure was undertaken upon very rational principles, and founded on the analogy of the treatment of other diſeaſes. All febrile diſeaſes admit of ſpontaneous recovery; and a patient may, no doubt, occaſionally ſurvive, in ſpite of improper practice; but the means employed in theſe caſes were of ſo active a nature, that they could hardly have failed to have proved viſibly pernicious, had they not been adapted to the complaint. From the terror naturally excited by this diſeaſe,

there

there is a great want of practical facts; and Mr. Tainſh having, much to his honour, attended theſe caſes with great deliberation and conſtancy of mind, his method of treatment ſeems highly deſerving of notice and imitation.

'The methods of prevention that were uſed are no leſs deſerving of attention. The minute accuracy and great pains with which all adhering infection was deſtroyed, cannot be too much commended; and it is to be preſumed that the ſafety of the attendant's and ſhip's company was owing to this.

'Mr. Tainſh obſerves, that this diſeaſe is not ſo contagious as is commonly ſuppoſed, and aſcribes its ariſing and conſtantly prevailing in Turkey, and not in the reſt of Europe, to the uncleanly habits, and to the careleſsneſs, indolence, and indifference of the Mahomedans, in conſequence of the religious tenet of predeſtination. When the plague was in this country, it chiefly affected the loweſt order of the people, who lived in ill-ventilated habitations, and were uncleanly in their perſons. This is a remark of Lord Clarendon, in the Hiſtory of his own Life; and he ſays, that, upon his return to London, he and the other people of condition, hardly miſſed one of their acquaintances who remained there during the plague. It has long been aſcertained that the ſphere of peſtilential contagion is very ſmall; and ſome are of opinion that abſolute contact is neceſſary in order to its being caught. However this may be, it is evident that it peculiarly affects the inhalents of the ſkin, and not the organs and avenues of reſpiration, like moſt other infectious febrile diſeaſes. All the peculiar diſcriminating ſymptoms of the plague are in proof of this, namely, the buboes, parotids, and carbuncles. It is remarked by Dr. Ruſſell, with his uſual accuracy of obſervation, that the glands of the groin which are affected with buboes in the plague, are not thoſe which are affected in the venereal diſeaſe, but thoſe ſituated under them, through which the lymphatics of the lower extremities paſs. The ſwellings of the axillary and parotid glands are alſo in the ſituations we ſhould expect from the abſorption of virus by thoſe parts of the ſurface of the body which are moſt expoſed to the air, and the contact of external bodies. Carbuncles are alſo in proof of the connexion of this diſeaſe with cutaneous abſorption; and upon theſe grounds we cannot but allow that the friction with oil had probably a great effect in preventing the abſorption of the peſtilential virus, and that this, as well as the other facts contained in this communication, ought to be made known to thoſe who are likely to be expoſed to this contagion, or whoſe duty it is to give directions for the prevention of this dreadful epidemic.

Med. Phyſ. Journ. No. cit.

---

§ 17. *On the Cæſarean Operation.*

Dr. *Kurtzwig*, of *Riga*, relates the hiſtory of a late ſucceſsful performance of the Cæſarian ſection, by which a dead child was extracted. The pelvis meaſured only two inches in its ſmalleſt diameter. The operation was thought neceſſary, becauſe the child offered no reſiſtance to the perforator. The firſt inciſion was made in the linea alba, to the extent of eight inches; the loſs of blood was inconſiderable. A correſponding

reſponding inciſion being made in the uterus, which was hardly one line thick, the back of the child appeared, already putrid. The uterus contracted itſelf very faſt, particularly round the placenta, which, on that account, was taken out with much difficulty. The application of the ſuture cauſed much pain to the patient. In the courſe of three months ſhe was entirely cured; and all the ſymptoms, during this period, were very ſlight. On the ſeventh day after the operation, a piece of the omentum ſeparated that was incarcerated in the lower part of the wound. *Ibid.*

The neceſſity of the operation, in the circumſtances above ſtated, will be queſtioned, probably, by moſt Britiſh practitioners.—Another caſe of the Cæſarean ſection is related by Dr. *Klein*, of *Stutgard*, but which terminated fatally on the fourth day afterwards. This author obſerves, that of one hundred and ſixteen caſes of the operation, which he found related in various works, ninety terminated ſucceſsfully. It is, however, remarkable, that there are more fatal caſes mentioned in modern times, where the operation has leſs frequently occurred, than between the years 1500 and 1769, in which period ſix fatal and ſeventy-ſix ſucceſsful caſes are recorded. Prof. *Loder*, of *Jena*, is inclined to refer the greater mortality in modern times to the operation being deferred to too late a period.

---

§ 18. *Cure of the Bite of a Snake by the Cauſtic Volatile Alkali.*

The patient, a woman, living in the neighbourhood of Madras, was bitten by a ſnake on two of the toes. She complained immediately of moſt excruciating pains ſhooting up to the groin, the glands of which were found ſwelled in ten minutes after the accident. An undeſcribable pain and uneaſineſs now aſcended as high as the cheſt, the pulſe was ſcarcely to be felt, and could not be counted; her hands were cold; ſhe was, however, ſenſible, and ſpoke diſtinctly. At this time (fifteen minutes after the bite) a tea ſpoonful of the alkali was given in a Madeira glaſs half filled with water, which ſhe ſwallowed without difficulty, or being ſenſible of its pungency. The wounds were afterwards rubbed with the alkali, ſcarified, and put into hot water. At this time the natives were anxious to aſcertain her ſituation by the teſt of her taſting ſalt: they, therefore, put ſome into her mouth; and on her being aſked what it was, and ſaying it was ſweet, they pronounced her in imminent danger. A ſecond ſpoonful of the alkali was given, not more diluted than the firſt, on her throwing herſelf back, gnaſhing her teeth, and calling out ſhe was dying; and ſoon a third tea ſpoonful in the ſame manner; the whole in leſs than ten minutes; the third ſpoonful, on reaching the ſtomach, evidently cauſed uneaſineſs, and a ſlight effort to vomit, when a little phlegm was brought up, and a profuſe perſpiration induced, cauſing large drops of ſweat to form on her face: ſoon after this, ſhe ſaid all pain had ceaſed, except in the toes bit, the wounds of which were now highly ſenſible and irritable. From this time ſhe gradually recovered, without any particular occurrence. The preparation of the cauſtic volatile alkali uſed was a ſtrong ſolution

tion of ſal ammoniac in water, into which powdered quicklime had been thrown.

Aſiatic Annual Regiſter for 1800.

§ 19. *Of the Climate of Columbo, in the Iſland of Ceylon, in the Eaſt Indies.*

From a table of obſervations on the general ſtate of the atmoſphere in the vicinity of Columbo, it appears, that the uniformity of its climate, both as to temperature and the regular denſity of the air, is quite unexampled. The variation of the barometer, in the ſpace of twelve months, is found to be only 0.36 of an inch, and that of *Fahrenheit*'s thermometer only thirteen degrees.—*Ibid.*

§ 20. *Of the Nutmeg Tree and its Fruit, in the Banda Iſles.*

The nutmeg tree grows to the ſize of a pear tree; its leaves reſemble thoſe of the laurel; it begins to bear fruit at ten years growth, and the fruit improves in quality, and increaſes in quantity, until the tree has attained the age of a hundred years. It requires to be ſecurely ſheltered from the hurricanes to which theſe iſlands are ſometimes expoſed; for many of the nutmeg trees are ſituated on the ſteepeſt ſides of the hills, where they cannot take deep root, and by conſequence are liable to be torn up by ſudden guſts of wind.

The nutmeg, when ripe on the tree, has both a very curious and beautiful appearance: it is about the ſize of an apricot, and nearly of a ſimilar colour, with the ſame kind of hollow mark all round it; in ſhape it is ſomewhat like a pear: when perfectly ripe, the rind over the mark opens, and diſcovers the mace, of a deep red, growing over and covering in part the thin ſhell of the nutmeg, which is black.

When the nutmegs are gathered, the mace is ſtripped off, and kept in baſkets to dry in the ſun; and the nutmegs, with ſhells on, are put into a drying houſe allotted for the purpoſe, where they remain on hurdles expoſed to the influence of a ſlow fire, and to ſmoke, for about three months. When they are dry their ſhells are broke, and the fruit put immediarely into chunam, or lime, which is neceſſary to preſerve them from worms and other inſects. It requires much experience, as well as a conſiderable degree of judgment, to aſcertain the preciſe time they ſhould be ſuffered to remain in the lime; for if taken out too ſoon they are wormeaten, and if left too long in it, they are burnt up, and rendered uſeleſs. After the nutmegs are taken out of the lime, they are cleaned and packed up in rattan bales of 200lb. ready for being ſhipped.—*Ibid.*

§ 21. *New Method of reducing Minerals by Alkalies; with a Deſcription of a portable Apparatus. By M.* Lowitz.

The method here pointed out is extremely ſimple and convenient for analyſing mineral ſubſtances; and ſuperior, in ſome reſpects, to that by the reverberatory furnace. It conſiſts in digeſting the powdered ſubſtance in diſtilled water, with the uſual quantity of pure cauſtic alkali, and evaporating the mixture to dryneſs, by the aid of a ſpirit lamp. For this purpoſe a ſmall cylindrical furnace is provided, made of tinned iron,

iron, four inches in height, and three in diameter, having a ſmall opening for introducing a ſpirit lamp, and pierced with holes in the ſides for admitting air. This is covered with a lid, having an opening in the top, of a ſufficient ſize to admit the bottom of a crucible to a proper depth. This crucible ſhould be large enough to contain 3 ounces of fluid, and provided with a cover, and a ſpatula for ſtirring the contents, all made of the fineſt ſilver. The lamp ſhould contain about an ounce and a half of ſpirits of wine. The powdered foſſil and alkali, with the water, being put into the crucible, and the lamp lighted, the mixture ſhould be boiled to dryneſs, frequently ſtirring it during the operation. When the maſs is dry, a freſh quantity of water is added, and again evaporated ; repeating this operation two or three times, according as the mineral is more or leſs refractory. If, during the ebullition, bubbles ariſe, which adhere cloſely to the fluid maſs, it is in general a ſign that the operation will ſucceed. By this method, M. *Lowitz* obſerves, he has ſucceeded in analyſing minerals of the hardeſt and moſt refractory kind ; and no danger is incurred of changing the qualities of bodies by the heat employed, as in reduction by the dry way. The operation in the dry way requires three or four hours to complete it : by the apparatus now deſcribed, an equivalent reſult is obtained in the ſpace of an hour and a half.

§ 22. *Of the Bread-Fruit Tree.*

M. *Van Noorden*, phyſician of *Rotterdam*, informed the Philomathic Society of Paris, that a ſurgeon, lately arrived from *Surinam*, had told him that the bread-fruit tree has ſo well ſucceeded in that country, that large walks of it were to be ſeen, and that the trees were productive beyond expectation. They make of it, in the country, a bread equal to that made from corn. For this purpoſe, they cut the fruit in ſlices, dry it in the ſun, and afterwards bruiſe it. The meal thus prepared, when kneaded into dough, riſes in fermentation, like that of corn, and may be preſerved for a conſiderable length of time.

§ 23. *Of Heat, or Fire.*

M. *Berthollet*, at a late ſitting of the *National Inſtitute*, made ſome intereſting obſervations reſpecting the properties of heat, or fire. He obſerved, that motion accelerates the communication of this principle, by cauſing the particles of fluids, at different temperatures, to approach each other, in conſequence of which their reciprocal action becomes more quick and inſtantaneous : but that we are not juſtified in concluding, from thence, that liquids and elaſtic fluids are *incapable* of tranſmitting heat, as Count *Rumford* ſuppoſes.

In the ſame ſitting, M. *Hallé* deſcribed the ſymptoms of the contagious diſeaſe which lately ravaged a great part of Spain. He proved that it was not the *plague* imported from the *Levant*, as many ſuppoſed ; but preciſely the diſeaſe known in America under the denomination of *yellow fever*.

§ 24.

§ 24. *Of the great Sympathetic Nerve.*

M. *Richerand*, a diſtinguiſhed French anatomiſt, contemplates the great ſympathetic nerve in a point of view which he believes to be entirely original. He conſiders it as forming a ſeparate nervous ſyſtem, independent of that of the brain, and deſtined particularly to the ſupport of life in the organs of what he terms, the *vegetative* functions; whilſt thoſe organs which perform the functions peculiar to the animal receive all their nerves immediately from the brain. Hence he accounts for the independent action of the heart, and its greater vivacioufneſs, in common with all the organs which concur, in a manner, more or leſs direct, in the elaboration of the nutritive matter, and which, like it, receive their nerves from the great ſympathetic. (*Decade Philoſophique.*)—The obſervations made by Dr. *Johnſton*, ſeveral years ago, reſpecting the uſe of ganglia of the nerves, detract pretty much, we imagine, from M. Richerand's claim to originality.*

§ 25. *Of a newly-diſcovered Earth.*

A new ſpecies of earth has been lately diſcovered in the Beryl of Saxony, by M. *Trommſdorff*, and which has the remarkable property of forming nearly taſteleſs ſalts with the different acids it is capable of combining with. On this account it has received the appropriate denomination of *aguſtine.*

§ 26. *On Animal Electricity.*

M. *Vaſſali-Eandi* has ſhewn, that, in the human body, there are parts in a ſtate of *poſitive*, and others in a ſtate of *negative*, electricity. *Buniva* placed an electrometer on the back of animals when in ill health, particularly cats, and he obſerved that the inſtrument gave no ſign of electricity. *Vaſſali* is convinced that the electricity varies in animals, in health, and when under the influence of diſeaſe. He propoſes to conſtruct an electrometer of extreme ſenſibility, and which he calls *vitalitometer*, for the purpoſe of indicating the ſtate of health, or diſeaſe.

It has been objected to him, that animals, though dead, were nevertheleſs ſenſible to galvaniſm; but he obſerves, that animals killed by taking phoſphorus internally, or by immerſion in an exhauſted receiver, are no longer ſuſceptible of galvanic irritation: whence he concludes, that when animal organization is deranged in a certain degree, the animal loſes its portion of natural electricity; and this derangement, he thinks, may be aſcertained by an inſtrument of great ſenſibility: this is the inſtrument he would call *vitalitometer.*

§ 27. *Atmoſpherical Tides.*

Humboldt, in the courſe of his travels at the *Caraccas*, in *South America*, has made a number of intereſting obſervations on the movements of the barometer near the equator. 'I have read,' he ſays, 'in the

* See our account of Dr. Johnſton's valuable work, in the ſecond volume of Med. and Chir. Rev. p. 354.

Tranſactions

Tranſactions of the Society of Bengal, that the barometer there aſcends and deſcends regularly every 24 hours. Here, in South America, this phenomenon is particularly remarkable. There are four atmoſpherical tides in 24 hours, and which depend only on the ſun's attraction.' The Mercury deſcends from 9 in the morning to 4 in the afternoon; and riſes from 4 to 11. From 11 it again deſcends till half paſt 4 in the morning, and riſes again from this time to 9 o'clock. Neither winds, tempeſts, nor earthquakes, have any influence on this progreſs.'

---

§ 28. *On the Structure of the* Ourang Outang.

A French writer, M. *Virey*, has juſt publiſhed a work entitled the Natural Hiſtory of the Human Species, containing, according to the editor of the *Journal de Phyſique*, the moſt profound reſearches on the nature of man, whom he regards, in common with the editor, as a ſpecies of the monkey. It will not, perhaps, be amiſs to point out here the facts which are in oppoſition to this concluſion, and which may ſerve to ſhew, that if there are ſome points of ſimilarity between man and the monkey tribe, the points of difference are ſtill more numerous, and ſuch as ought to incline us to rank the latter with the brute creation. M. *Latreille*, engaged in making additions to the celebrated work of *Buffon* on this part of Natural Hiſtory, points out the following peculiarities in the ſtructure of the *ourang outang*, that ſpecies of the monkey which moſt nearly reſembles the human form, and which ſhew it to poſſeſs an organization widely removed from that of man.

1. In the firſt place, the occipital foramen in the *ourang outang*, is placed more backward than in man; hence the head is not in perfect equilibrium when the animal ſtands erect, and the eyes are directed upwards; but, whilſt on all fours, the direction of the eyes is naturally ſtraight forward.

2. The pelvis has its axis parallel with the ſpine; and ſo narrow, that it is incapable of furniſhing a ſufficient baſe to the trunk; hence the body cannot remain long in a perpendicular ſituation.

3. The hind feet do not reſt on the entire ſole, but merely on their external edge, preſenting no ſufficient point of ſupport. It appears evident from their ſtructure, that nature formed them for the purpoſe of climbing with facility.

4. The groove of the os femoris, in which the knee-pan ſlides when we extend the leg, is ſo ſhort, and the flexor muſcles are inſerted ſo low down, that the ourang outang has conſtantly its knees in the half-bent poſition.

5. Its larynx is incapable of emitting ſounds, the air entering into two conſiderable ſacs, placed on the fore part of the neck, and communicating with the trachea, before it paſſes through the glottis.

6. The thumb is ſo ſhort, that it is of ſcarcely any utility.

7. The maxillary bone, as in all the mammiferous animals, man excepted, is divided by a ſuture running between the canine tooth and the laſt of the inciſors; ſo that theſe laſt are all implanted in the intermaxillary bone.

§ 29.

§ 29. *On the Inſtrument of the Voice in Birds.*

M. *Cuvier*, of the French National Inſtitute, has made a number of intereſting obſervations on this ſubject. In animals of the mammiferous claſs, he remarks, the trachea arteria is a continued tube, without any contraction or fold capable of vibrating, except at its ſuperior extremity the glottis. The ſound being formed at the iſſue only of the trachea, this tube can have no power to modify it. In birds, on the contrary, at the inferior extremity of the trachea, at the place where it divides into two, to go to the lungs, a contraction is found, the borders of which are furniſhed with membranous folds, ſuſceptible of tenſion and vibration: in a word, at this part is found the true glottis, provided with every requiſite for the formation of ſound. It is the various movements of theſe folds which render the inferior larynx capable of varying the ſound. There are different muſcles capable of elongating the trachea: when theſe ceaſe to act, its elaſticity reſtores it to its natural ſtate.

From what has been ſaid, it appears, that ſound is produced in the vocal organ of birds in the ſame manner as in the wind inſtruments of the claſs of horns and trumpets; and that it is modified in its tone by the ſame means that we employ in thoſe inſtruments; namely, 1. By the variations of the inferior glottis, which correſpond with thoſe of the lips of the players, or the reed of the hautboy, and the like. 2. By the variations in the length of the trachea, correſponding with certain horns, or the different lengths of the pipes of an organ. 3. By the contraction or enlargement of the ſuperior glottis; having the ſame effect as the hand of the horn player.

The form of the trachea of birds anſwers to that of our inſtruments which approach the moſt nearly to their voice. Thus the birds whoſe voice reſembles the flute in tone, have the trachea cylindrical. Thoſe which have the trachea of a conical form, narrower towards the baſis than above, utter ſounds reſembling the clangor of the trumpet, the clarion, and others of that deſcription.

---

§ 30. *On the continued Growth of Plants in the ſame Soil.*

It has been commonly ſuppoſed by farmers, that ſeeds and plants will degenerate unleſs the ground in which they are planted be frequently changed. Some obſervations and experiments that have been lately made in this country, as well as in America, ſeem to render the truth of this ſuppoſition doubtful. It has been found here, that even potatoes may be conſtantly grown in the ſame ground without any degeneration, provided the cuttings be always made from the fineſt potatoes, inſtead of the ſmalleſt and worſt, which have actually been employed for this purpoſe: and in America it has been ſhewn, by the actual experiments of Mr. Cooper, that the ſame thing happens with reſpect to the ſeeds of the long watery quaſh, early peas, potatoes, and ſeveral other kinds of vegetables. The ſame principle has, indeed, long ago been applied in the breeding of animals, by Mr. Bakewell. It is generally known, that he improved his breeds by merely coupling thoſe in which the properties he wiſhed to produce were the moſt evident, not regarding conſanguity, or any other circumſtance.

§ 31. *New Theory of the Formation of Hail-ſtones.*

Prof. *Mitchill*, of *New York*, whoſe theory of the nature and compoſition of peſtilential and contagious effluvia, or miaſmata, is known to our readers, explains the formation of hail-ſtones in the upper regions of the atmoſphere in a manner highly ingenious. ‘ Beſides the depoſition of water from the atmoſphere, by the diminution of the temperature of this laſt, there is another ſource,’ Dr. *M.* obſerves, ‘ provided by nature, from which rain may be produced: this is by the operation of electricity upon hydrogenous and oxygenous airs. It has been found by Lavoiſier, Seguin, Jacquin, and their aſſociates, that ſparks ſent through inflammable and dephlogiſticated airs, in proper proportions, convert the whole of them into pure water. And it has been aſcertained by Cavendiſh, and others, that if a quantity of ſeptous (azotic) gas is preſent with the other two, there is frequently generated a quantity of nitrons acid. The production of this acid, from the commixture of the three airs in the apparatus, has, indeed, been objected to by ſome perſons as inconcluſive or fallacious; but, I think, without reaſon. That this nitrous acid ſprung from the ſeptous (azotic) air preſent, in this experiment, I hold for certain. And thus, in the pneumatic machine, mere water was yielded when the two airs were exploded together, and ſeptous (nitrous) acid when the third was added.

‘ Bergman has confirmed (analyſis, § 4.) the experiments of Margraaf, that rain water is generally contaminated with feptous (nitrous) acid, and that even ſnow water contains ſome ſlight veſtiges of it.

‘ From the violence, copiouſneſs, and *rapidity* of electrical flaſhes in the clouds, during the prevalence of thunder ſtorms, there, doubtleſs, is generated a quantity of water from the exploſion of oxygenous and hydrogenous airs in the higher parts of the atmoſphere, quite ſimilar to what happens artificially in the chemical reſervoirs. And as ſeptous air is there abundantly preſent, the formation of the ſeptous acid is, in like manner, very readily accounted for. Strong ſeptous (nitrous) acid, though when mixed with common water, it produces a great degree of heat, yet, when mixed with ice or ſnow, produces a great degree of cold, inſomuch as to have given riſe to the converſion of that tickliſh fluid quickſilver into a malleable metal. Such immenſe congelation which was known to Fahrenheit, as long ago as the year 1729, was carried ſo far by Braun, in 1759, by mixing nitrous acid with pounded ice, and with ſnow, as to render mercury ſolid.

‘ If water is precipitated in ſmall drops, from its ſolution in air, at any height above the region of congelation perpendicularly over us, it will, in the firſt moments of its fall, be probably changed to ſnow; and the flakes of this, as they arrive at lower and warmer ſtrata of air, will be thawed to water again. This is, perhaps, a common occurrence during the warmeſt days of ſummer.

‘ But during the prevalence of our hotteſt weather, pieces of ice, too large and too cold to be melted by paſſing through the heated inferior ſpaces of the atmoſphere, do now and then reach the earth, and remain thereon a conſiderable time before they undergo liquefaction. The queſtion is, What is the immediate cauſe of this phenomenon?

‘ I am

'I am prone to believe, that if the flakes of ſnow, before melting, meet with ſeptous acid in the elevated tracks of the atmoſphere, the two ſubſtances will act with each other, as in Fahrenheit's and Braun's experiments, and liquefy; but during this liquefaction they will abſorb, in proportion to the quantities of the two materials melting in a given ſpace, an extraordinary quantity of ſenſible heat from the neighbouring objects, and convert it into a latent ſtate; or, in other words, while the ſnow is paſſing to a liquid form, a prodigious degree of cold will be generated.

'The experiments already referred to, give us ſufficient proof of the intenſeneſs of the cold produced by mixing ſnow and nitrous acid together. Shall ſuch a mixture, which, under favourable circumſtances and artificial management, can congeal quick-ſilver, not be capable, in a natural proceſs, of conſolidating even water into bits of ice, at the height of ten or twelve thouſand feet in the air? A bare inſpection of a hail-ſtone is ſufficient to ſatisfy the examiner, that the original ſnow-flake, which may be imagined to have conſtituted its nucleus, had been partly, if not wholly, melted before it aſſumed the form of hail. This is alſo apparent from the conſideration, that ſnow-flakes are naturally formed in beautiful and regular cryſtals; and when they deſcend to earth, through an atmoſphere cold enough to prevent their melting, as happens in the winter time, the figure and elegant ſtructure they firſt aſſumed in freezing continues unaltered in ſtill weather, until they alight upon the ground. And further, as there is no inſtance, at leaſt that I know, of water being precipitated from its ſolution in air, in diſtinct drops of ſeveral ounces, but, on the contrary, as it is always ſeparated into ſmall globules, a requiſite to the aggregation and conſolidation of theſe into a large bit of ice is, that, between the formation of the original ſnow-flakes and the ſubſequent hail-ſtones, there ſhould have been an intermediate ſtate of liquidity.

'To recapitulate: 1. Water may be precipitated from the air, and fall to the earth through ſpaces warmer than 32 degrees Fahrenheit's ſcale; as in the rain drops of common low ſhowers: or, 2. It may be diſengaged, and, in ſome part of its deſcent, paſs through a region colder than 32 degrees, whereby the ſeparate globules will be frozen to flakes in mid-air, as in ordinary cryſtals of gently-falling ſnow: or, again, 3. It may, after being ſevered from its connection with air, be converted to ſnow-flakes, which, meeting with ſeptous acid, may be melted thereby, and, eſpecially if a ſudden rarefaction ſhould happen at the ſame time, may produce a degree of cold extreme enough to freeze all the water in the neighbourhood, and form hail-ſtones of the greateſt magnitude.

§ 32. *On the Influence of the Moon on the Atmoſphere.*

Meteorology is a ſcience, M. *Lamarck* obſerves, and the only one which, for a long period, has made no progreſs towards improvement. Meteorological obſervations, indeed, have been made, and regularly publiſhed; but they have led to no uſeful or practical concluſion, and ſerve merely to ſwell the bulk of the volume to which they are attached. This

This has arisen from the result being always given in general terms, the extremes or average only being, for the most part, noted; hence they serve merely to determine the character of a particular climate. The object to be sought after, and which meteorological observations, properly made, are calculated to promote the attainment of, is the determination, whether the principal variations which take place in the atmosphere observe any regular periods, and what are the chief causes which influence them. The importance of an enquiry of this sort to agriculture, medicine, and other arts, is almost too obvious to mention. It would lead us to foresee and expect the principal periods of great variations of temperature, of moisture and dryness, &c. in the atmospheres, and enable us, in some measure, to prepare for or guard against their effects. In a long memoir on this subject, published in the *Journal de Physique, Germinal, an.* 9. M. *Lamarck* points out the proper mode to be pursued in making meteorological observations, and the advantages likely to be derived from their being conducted on a sufficiently large scale, by numerous observers in different situations. His own observations, confirmed by those of M. *Toaldo*, the result of more than 40 years experience, shew, that the moon exerts a considerable influence on the atmosphere, and that this planet is one of the principal causes which occasion the changes the latter undergoes. In passing through its orbit in the course of a month, the moon departs from the equator alternately towards the south and towards the north. During this constantly varying declination, he observed determinable changes in the state of the atmospheric phenomena, subject, however, to various interruptions and exceptions, which it is the business of meteorology, properly conducted, to account for and explain.

The effects observed to accompany the alternate elevation and depression of the moon from the equator, in the course of each lunar month, are as follow. During the moon's southern declination, and especially at the approach of its southern lunistice, the prevailing winds blow from the north, the north-west, the north-east, or some one of the points comprised within those limits. The constitution of the air which takes place is commonly dry or cold, according to the season, and occasions in general fine weather.

During the northern declination of the moon, and especially at the approach of the northern lunistice, the chief winds that prevail blow from some one of the points opposite to those above stated, as predominating during the southern declination. The constitution of the atmosphere which accompanies it, is usually productive of close damp weather, with more or less of rain, and is favourable to the formation of tempests and storms.

M. *Lamarck* regrets that his observations and discoveries on this subject have been so little attended to; and remarks, that had the French Admiral *Gantheaume* the least confidence in them, he would not have put to sea with his fleet on a late occasion, during the moon's northern declination; he would then have escaped the formidable tempest he encountered, and which, in a great measure, frustrated the object of his enterprize.

§ 33. *On the different Species of Mental Derangement, by M.* Pinel (Mem. de la Soc. Med. d'Emulation, an. 7.)

We had occaſion in our laſt volume *, to notice a memoir by M. *Pinel*, on the ſubject of periodical mania. In the preſent, the author's intention is to form a methodical diviſion of the different caſes of mental derangement that occur, for the purpoſes of introducing clear and preciſe ideas on the ſubject; for pointing out the proper diſpoſition of lunatics in an hoſpital, where the patients are for the moſt part huddled together without diſtinction; and particularly for throwing light on the treatment of each ſpecies of the diſeaſe. In order to obtain this end, he compares together the multifarious derangement of the intellectual functions, with the functions themſelves, as performed in the healthy ſtate. The writings of the moſt celebrated pſychologiſts, as Locke, Harris, Condillac, Smith, Stewart, &c. have been ſucceſſively the ſubjects of his meditation; and, as the reſult of his enquiries, he endeavours to eſtabliſh the following claſſification of the derangements of which the mental functions are ſuſceptible.

Sometimes, M. *Pinel* obſerves, the perception, or imagination, undergoes a manifeſt alteration, without any interior emotion; this he ſtyles *melancholy*, or mild delirium on any object, without rage *(delire ſans fureur)*; at other times, the intellectual functions remain entire, and the patient is imperiouſly controlled by a turbulent and implacable activity *(fureur maniaque non délirante)*. In ſeveral caſes of mania, a periodical or continued delirium is joined with acts of extravagance and fury, *(delire maniaque)*. Sometimes we obſerve a ſtate of inſanity, a ſort of moral diſorganization, where the ideas and internal emotions have no relation to the impreſſions of external objects, but are confuſed, irregular, and leaving no trace behind them *(démence, ou abolition de la penſée)*. It is ſtill worſe, when an obliteration of thought, a privation, more or leſs perfect, of ideas and emotions, takes place, conſtituting the ſtate of *idiotiſm.*

Theſe are the five ſpecies of mental alienation which the author endeavours to eſtabliſh: they preſent different phenomena, have not the ſame progreſs, and do not yield to ſimilar curative means. The comparative frequency of the different ſpecies will appear from the following table of obſervations, as occurring at the *Bicetre* Hoſpital in Paris, on a late cenſus. Of 200 patients in a ſtate of inſanity, 22 were affected with *melancholia*; 15 were furious without delirium; 80 maniacal, that is, furious or raving with delirium; 18 affected with the fourth ſpecies of inſanity mentioned above; and 60 had fallen into a ſtate of fatuity, or idiotiſm.

Since the above was written, M. *Pinel* has publiſhed a complete Treatiſe on Inſanity, of which the memoirs already given form a part.

---

§ 34. *Hernia of the Uterus.*

The volume of memoirs quoted above, contains alſo a ſingular caſe of inguinal hernia of the womb, related by M. *Lallement*, profeſſor of medicine. The tumour was of a large ſize, of a pyramidal ſhape, and ſituated

* P. 365.

ſituated in the right groin. Its baſis was extremely hard, whilſt the ſummit remained ſufficiently ſoft to the touch. The patient had borne ſeveral children without difficulty, and the menſes diſappeared at the uſual period, without any ill conſequence ſupervening. The tumour firſt made its appearance when ſhe was about fifty years o age, in conſequence of ſome exertion; it, however, incommoded her very little, and ſhe died, at the age of ſeventy-one, of an affection of the cheſt.

On diſſection, the ſac was found to contain the whole of the uterus, with the right fallopian tube and ovary: the other ovary, with its tube, was applied to the external edge of the ring. The vagina, by its connection with the womb, was drawn aſide obliquely.

§ 35. *On the Extraction of Opium from the Garden Lettuce.*

It has been long known that the milky juice of the lettuce poſſeſſes narcotic properties; but it is of late only that a ſubſtance has been extracted from it, having all the properties of opium. Dr. *Coxe*, of Philadelphia, has proved, that the inſpiſſated milky juice of the *lactuca ſativa*, or common cultivated lettuce, of Linnæus, is real opium, and, according to every appearance, of a quality ſuperior to the eaſtern, or that procured from the capſules of the *papaver ſomniferum.* By comparative experiments it was found, that ten grains of extractive matter were taken up from the former, by two ounces of rain-water; while, from the ſame quantity of opium, only nine grains were diſſolved by an equal quantity of water.

The ten grains of the former which were left on the filter, being infuſed with half an ounce of alkohol, and again filtered on the tenth day afterwards, left on the filter ſeven grains. The quantity of reſinous matter, therefore, was three grains. The eleven grains left from the common opium, by a ſimilar treatment, were found alſo to contain three grains; the portion inſoluble either in water or alkohol being eight grains. The reſin being afterwards precipitated from the alkohol by the addition of water, that of the lettuce appeared whiter than the other. By trials made in the Pennſylvania Hoſpital, and by experiments made by Dr. *Coxe* on himſelf, the lettuce opium was found to poſſeſs all the properties of the common.

The milky juice from which the opium is prepared exiſts in the ſtalk and in the leaves of the plant. It is not indiſcriminately depoſited throughout, but is placed in appropriate veſſels running longitudinally in the woody or fibrous part of the ſtalk. The internal, or medullary part, is ſoft and perfectly bland to the taſte; abounding in a tranſparent mucilaginous juice, which has not the ſmalleſt analogy to the milky one above mentioned. The beſt time for collecting the milky juice is when the plants are beginning to ſeed: before this, it has not acquired its medical properties, and at a later period the produce is by no means ſo conſiderable: It is procured in the ſame manner as from the poppy, viz. by inciſions; with this difference, that in the poppy they are made longitudinal, but in the lettuce they muſt be circular. A very moderate depth ſuffices. It exudes freely in milky drops, which may be either immediately collected, or ſuffered to dry on the ſtalk, and then ſcraped off,

off, and depoſited in proper veſſels. Some attempts were made to obtain it by preſſure, but the other juices of the plant ſeemed to alter it conſiderably.

All the ſpecies of lettuce contain opium in a larger or ſmaller proportion. The common lettuce, as has been before obſerved, produced that made uſe of by Dr. Coxe; but the *lactuca ſylveſtris*, or *viroſa*, of Linnæus, contains it moſt abundantly. The former, however, ſhould, perhaps, be preferred; as it will ſerve the double purpoſe of being cultivated for the table as well as for the druggiſt. The ſale of the ſupernumerary plants would probably more than repay the expence attending the cultivation of thoſe intended for opium; indeed, a number of plants generally run to ſeed, and are loſt at preſent, which might be made to turn to good account.

Similar experiments to thoſe of Dr. *Coxe*, above related, have been lately made, we learn, in England, by Mr. *Cartwright*, and with equal ſucceſs.

American Philoſ. Tranſ. Vol. IV.

§ 36. *On the poiſonous Property of the Rhus Radicans.*

M. *Van Mons* is convinced, from inquiry, that the poiſon of the *rhus radicans*, or *toxicodendron*, reſides in a ſpecies of gas diſengaged from the plant whilſt growing in the ſhade: he collected fifteen inches of this gas, and different experiments proved that it is carbonated hydrogen gas, holding in ſolution the deleterious miaſma, and that this itſelf is a hydro-carbone.

Willemet experienced in himſelf the danger ariſing from the exhalations of this plant. M. *Dufreſnoi* has proved, by various trials, that the extract of the rhus radicans is a remedy of great efficacy in palſy and certain cutaneous eruptions, as tetter (*dartres*).

§ 37. *European Coffee.*

The Academy of *Peterſburgh* has been long occupied in endeavouring to diſcover a convenient ſubſtitute for the coffee berry. This, they imagine, is to be found in the acorn, a ſubſtance which contains all the requiſite qualities, with the exception of a certain oily principle which, however, they contrive to furniſh it with, by the following proceſs. The acorns are firſt peeled, and then roaſted, till they have acquired a brown colour, and whilſt ſtill hot, ſome ſmall portions of new and unſalted butter are added; the whole is then ſtirred briſkly together, that the butter may penetrate to every part.

§ 38. *Prevention of Contagion amongſt the Poor.*

An inſtitution has juſt been formed in London, to prevent the ſpreading of contagious fevers among the indigent inhabitants of the metropolis, on the plan ſo ſucceſsfully adopted at Mancheſter; an example which deſerves to be followed by all the populous towns in the kingdom. For an account of this the reader may conſult *Med. and Chir. Rev. Vol. V. p.* 171.

No. XLIV.

THE MEDICAL AND CHIRURGICAL REVIEW.

SEPTEMBER, 1801.

Art. XVII. Duncans' *Annals of Medicine for the Year* 1800. Vol. V.

(Continued from p. 25.)

4. THE next article under the head of *Medical Obſervations* is by Dr. *R. Hall*, on the effects of cold applications to the head in caſes of inſanity. In ſeveral caſes of incipient, and in one of confirmed inſanity, Dr. Hall remarks, he has witneſſed the happieſt effects from the aſſiduous employment of this remedy. Cloths dipped in the coldeſt water, or artificially rendered ſo, after being gently wrung, were kept conſtantly applied to the head, and renewed as they acquired heat, until a ſenſe of cold and chillineſs was induced, and propagated over the whole ſyſtem, which ſeldom failed to produce relief, and prove the harbinger of returning rationality; after which, for the moſt part, an occaſional recurrence to this remedy was only found neceſſary.

5. 'Account of a method employed in Bengal for the cure of the cutaneous diſeaſe, commonly known by

by the name of ring-worms, by means of Caſſunda vinegar; by Dr. *Adam Freer*, of Bengal.' The diſeaſe here deſcribed is the *herpes ſerpigo* of Sauvages, and is particularly frequent in India during the rainy ſeaſon. It generally makes its appearance on the thighs, and ſometimes ſpreads over the trunk of the body, neck, and face, obſtinately reſiſting the common remedies in cuticular affections, as preparations of ſulphur, lead, and even mercury. The remedy here announced as ſovereign, is the *caſſunda*, or *caſſia ſophera* of Linnæus. An ounce of the freſh bark, roots, tops, or flowers of this plant, is cut ſmall, and boiled with a pint of good wine vinegar to eight ounces. This is applied to the parts affected two or three times a day.—*Query.* Has not the vinegar the largeſt ſhare of merit in this caſe?

6. 'Account of the employment of very large quantities of the ærugo æris exhibited internally to a horſe, with a view to the cure of the glanders; by Mr. Robert Lawſon, ſurgeon to the Oxfordſhire light dragoons.' The uſual ſymptoms of *glanders* are, inflammation and ulceration of one or both noſtrils, from which a fetid ichorous matter is diſcharged, often of a green colour. The diſeaſe is ſometimes extended over the whole *ſeptum narium*, and is even attended at times with enlargement and inflammation of the tonſils. The ærugo was given by the author daily in the quantity of an ounce, for a conſiderable length of time, without exciting any remarkable ſymptom, and without advantage to the diſorder. On examination after death, the coats of the ſtomach did not ſeem to have been at all affected by the verdigriſe; and what is not a little remarkable is, that ſeveral hundred of the worms termed *botts* were found fixed to the ſtomach. It does not, therefore, with horſes operate as a vermifuge, at leaſt againſt the botts.

7. 'Caſes of patients treated at the *Diſpenſary* and *Lunatic Aſylum* of *Montroſe*, by Dr. *James Roſs*, one of the phyſicians.' Theſe are, 1. A caſe of hæmoptyſis,

tyfis, terminating fuccefsfully under the ufe of nitre combined with an opiate. 2. A cafe of paralyfis of the right arm removed under the ufe of electricity. And, 3. A remarkable inftance of long fafting. The patient in the laft cafe was a lunatic, and has often been known to abftain from every kind of food, both folid and liquid, for the fpace of fourteen days without intermiffion. No entreaties, menaces, nor even blows, could induce him at thefe times to fwallow any thing; and he did not appear to be much weakened by this long-continued want of aliment.

8. 'Hiftory of a cafe of angina polypofa, or croup, which terminated fuccefsfully under the ufe of calomel and emetics: by Dr. *Albers*, of *Bremen.*'

9. 'Remarks on a cafe of *inverfio uteri* terminating fatally: by the fame.' The inverfion in this cafe took place foon after delivery, and without any attempt on the part of the midwife to remove the placenta. The uterus was replaced in a fhort time, but the woman foon after expired fuddenly in a fit. The caufe of death here it is not eafy to afcertain, there having been no previous hæmorrhagy, nor any violence ufed in the reduction.

10. 'Cafes of yaws and leprofy, treated with nitrous acid and oxygenated muriate of potafh: by Dr. *C. Chifholm.*' A cafe of yaws is here defcribed which appeared to have been cured by the nitrous acid; and Dr. *Herries*, of *St. Vincent's*, obferves, that in his hands this remedy had cured two cafes of the fame difeafe, and one of lues venerea. Trials, however, have been made in Demerara, in yaws, which have hitherto failed, partly, the author obferves, from the impurity of the medicine originally, and partly from an injudicious expofition of it to the fun. A lofs of power from the latter caufe, we may remark, has not been afcertained by any experiments. Three cafes of leprofy are related in which the acid was employed: of thefe one was cured, and the others greatly re-

 lieved,

lieved, and apparently in their progreſs towards a cure.

11. ' A curious caſe of ſpaſmodic affection of the face, cured by the oxygenated muriate of potaſh: by the ſame.' This diſeaſe occurred in a lady after ſhe had been for ſeveral years afflicted with excruciating head-achs. The ſpaſms recurred repeatedly in the courſe of the day, and more eſpecially after uſiug the jaws in the maſtication of food, or after ſneezing or other violent exertion: all the muſcles of the face, but particularly thoſe of the upper lip, of the noſe, and of the cheek, were thrown inſtantly into a ſtate of rigid conſtriction, by which the whole of the parts mentioned were drawn up towards the eyes, and produced a moſt horrible aſpect of viſage. This generally laſted from two to five minutes, when the muſcles ſuddenly relaxing, ſome ceſſation of extreme torture was experienced. After an uſeleſs trial of a great variety of remedies, the oxygenated muriate of potaſh was reſorted to, the complaint being ſuppoſed to proceed from a *diſoxygenation of the ſyſtem**. Thirty grains per day were exhibited, and in three weeks the patient was entirely free from complaint. The efficacy of the remedy was fully aſcertained, in conſequence of a relapſe which took place; when, on being again had recourſe to, the ſymptoms entirely diſappeared.

12. ' A ſhort account of the epidemic polypus at Grenada, in 1790: by the ſame.' The diſeaſe here deſcribed took place in ſome negroes, after being more than uſually expoſed to exceſſive heat, a cold chilling current of air, and marſh miaſmata. It is thus deſcribed.

' The diſeaſe made its appearance on the plantation Grand-mal, about the end of September or be-

* It is much to be wiſhed that practitioners would not ſo haſtily take up hypotheſes which reſt on ſo very ſlender a foundation: ſuch haſty aſſumptions certainly diſqualify them for making accurate and unprejudiced obſervations, and tend to prevent that combination of means which experience or analogy might otherwiſe ſuggeſt.

ginning

ginning of Oſtober; was moſt prevalent towards the cloſe of the latter month, and diſappeared totally in November. The whole number of ſick might have been about forty, of whom ſeven died. Its commencement was marked by no diſtinguiſhing ſymptom; but, ſoon after, the patient complained of pain at the pit of the ſtomach and head, and difficult reſpiration. Theſe pains were attended with a dry ſkin, ſmall quick pulſe, and ſlight dry frequent cough. No febrile heat accompanied theſe ſymptoms; on the contrary, the ſurface was at this period remarkably cool; but a heavineſs and dulneſs of eye, a melancholy or depreſſion of ſpirits, and features ſtrongly expreſſive of anxiety, were conſtant attendants. The ſtate of the patient was thus characterized for three days. At the expiration of that period, the pulſe became extremely quick, from 120 to 140, and intermitted, attended with a penetrating pungent heat, which produced a pricking ſenſation on the hand of the perſon feeling the pulſe. But this ſtate of the pulſe and heat, as well as the pains, anxiety, and other diſtreſſing ſymptoms, now alſo intermitted, or rather the diſeaſe aſſumed ſomething like an intermittent form; the intermiſſion, if it may be ſo called, continuing eight or nine hours. During the paroxyſm, the ſtruggle for breath, the aggravation of all the other ſymptoms, and *the very quick, interrupted, and evidently viſible, as well as audible, palpitation of the heart,* produced a ſcene of uncommon horror. The paroxyſm was ſucceeded by a cold clammy ſweat, and a ſtate of approaching ſyncope. The ſecond paroxyſm generally put a period to the exiſtence of the patient. The diſeaſe was alſo diſtinguiſhed, during this latter ſtage, and even for ſome time previous to its commencement, by a conſtant, or almoſt conſtant, diſagreeable clammy ſweat overſpreading the face, the upper extremities, and the body as low down as the ſcrobiculus cordis, all below remaining arid and parched in a moſt remarkable de-

I 3 gree.

gree. The diſeaſe ſeemed ſometimes inclined to terminate by metaſtaſis: one inſtance of this was remarkable, wherein a ſpontaneous abſorption of the lymph depoſited in the heart, and a depoſition of it in the left arm and left thigh, took place. The patient, in this caſe, after labouring under all the ſymptoms peculiar to the diſeaſe before the intermittent period, found himſelf all at once, and without an evident cauſe, relieved of them; but he perceived, at the ſame inſtant, an excruciating pain a little above the elbow, and nearly about the middle of the thigh. He continued ever after abſolutely free of all the ſymptoms of the polypus; but they were ſucceeded by a large abſceſs in the parts in which he felt the pain. That in the arm diſappeared gradually; but the other became ſo large as to occupy the whole of the under part of the thigh. The cure was effected by paſſing a ſeton through the whole length of the tumour; by the uſe of two dozen of Madeira wine, a large quantity of bark, and a calomel pill, with opium three times in the day. The audibleneſs of palpitation may be conſidered as exaggeration; but in one inſtance, particularly, the gentleman (Mr. MacSween), to whom the negroes belonged, heard diſtinctly the palpitation, although in an adjoining room.

'What mode of practice did ſo extraordinary a train of ſymptoms indicate? I could fix on none till diſſection inſtructed me. Having no ſuſpicion of the heart being the ſeat of this uncommon malady, I did not examine that organ in the two firſt bodies I opened; but finding all the other viſcera and the brain in a ſtate of health, I found myſelf ſtill unequal to account for the extraordinary ſymptoms the patients had been afflicted with. At length, on opening the third body, I examined the heart, and diſcovered what I conceived might be conſidered the cauſe and ſeat of the diſeaſe.

'In the right ventricle I found a polypus, which extended conſiderably into the pulmonary artery.

On

On extracting it, it meaſured exactly two feet and two inches in length; and the body of it contained in the ventricle, two inches in breadth. In the fourth body there was a very large polypus in the right and left ventricle beſides one in the right auricle. The hearts of the 5th, 6th, and 7th, were circumſtanced preciſely ſimilar; and in theſe five, except one where the lungs were morbidly affected, no other morbid appearance of any deſcription could be perceived. Did theſe extraordinary circumſtances juſtify the appellation, *epidemic polypus?*

'After a variety of ineffectual attempts to cure this diſeaſe, I determined on the following, and found it ſucceſsful: from the conſideration of the circumſtances contributing to the production of the diſeaſe, ſo far as they were diſcovered; of the features of the diſeaſe itſelf; and of the morbid changes obſerved in the dead bodies; it may be fair to conclude, that a laxity of fibre, a want of due coheſion in the maſs of blood, and a conſequent depoſition and accumulation of coagulable lymph in the cavities of the heart, where the various valves and columni favour ſuch accumulation, produced polypi, an interruption, and at length a total ſtop, to the circulation. Having this view of the diſeaſe, it was manifeſt that ſuch means as might prevent depoſition and accumulation of coagulable lymph, or deſtroy it, ſhould it have happened, in the firſt inſtance, and afterwards reſtore tone to the fibre, would cure the diſeaſe. The action of mercury on the abſorbent ſyſtem I had for ſome time been acquainted with, and its probable efficacy in that way, here, readily occurred to me. My mode of treatment, therefore, was this: the moment I could diſtinguiſh the diſeaſe, I bled, in order to render circulation through the lungs and heart leſs difficult and obſtructed. This evacuation was never repeated without great caution, and the moſt evident neceſſity. After this I gave calomel in doſes of five grains, guarded with opium, every fourth hour, and continued it till

I 4 ſalivation

ſalivation was excited. Under this treatment I loſt not a ſingle patient; the fatal terminations having taken place before I could carry it fully into execution.'

The affection above deſcribed is certainly ſufficiently ſingular and important to attract the notice of practitioners; many difficulties, however, occur in admitting the author's ſpeculations with regard to its nature and immediate cauſe. The intermiſſion of ſymptoms which occurred, is a ſufficient proof that the coagulated lymph found in the ventricles of the heart was not the *cauſe* of the affection, but an effect merely, and took place, probably, after death. The ſuppoſed termination by metaſtaſis, ' wherein a ſpontaneous abſorption of the lymph depoſited in the heart, and a depoſition of it in the left arm and left thigh, took place,' is not reconcilable to modern ideas of the animal œconomy. The uſe of mercury was, perhaps, really as ſerviceable as the author conceives it to have been; though its mode of action, as here ſuggeſted, cannot be admitted.

Under the *third* head of *Medical News*, we have a variety of communications on the ſubject of cow-pox, none of which, however, contain matter new to our readers.

Mr. *Ab. Wiſe,* ſurgeon at Maryport, gives an account of the ſucceſsful application of what he terms the *oleum tritici* in the *ring-worm* and other cutaneous affections. It is prepared by gently preſſing a quantity of wheat between two heated plates of iron, which produces the exudation of an oily empyreumatic fluid. The ſame gentleman obſerves, that he has alſo uſed with ſucceſs the cuprum vitriolatum in caſes of hæmorrhagia and ſyphilis. A drachm of this ſalt is diſſolved in two pounds of water: of this ſolution a tableſpoonful is taken every morning. This remedy, he obſerves, ſeldom fails to eradicate the diſeaſe.

A ſingular

A ſingular inſtance is related of peculiar effects excited by the Peruvian bark in a medical friend of the editor; effects reſembling, it would ſeem, thoſe produced in certain perſons by ſome bitters, as bitter almond, &c. The determination to the head was ſo great as to threaten apoplexy. Vomiting almoſt immediately relieved him. The ſame effect took place, whether the extract, the powder, or the cold infuſion, were employed. The colombo root was taken without inconvenience.

ART. XVIII. *Philoſophical Tranſactions of the Royal Society of London for the Year* 1801. Part I. 240 pages, 4to, price 17s. London. ELMSLEY.

THE firſt article in the preſent collection is the *Croonian Lecture*, by Mr. *Home;* the ſubject, *the Irritability of Nerves.* The nerves, Mr. *Home* obſerves, have been hitherto conſidered as chords that have no power of contraction within themſelves, but only ſerving as a medium, by means of which the influence of the brain may be communicated to the muſcles, and the impreſſions made upon different parts of the body conveyed to the brain.

'The difficulties which attend every attempt to inveſtigate the real ſtate of the nerves in the living body, and the impoſſibility of acquiring any information upon this ſubject after death, may be urged in excuſe for this opinion having been ſo univerſally received, ſince it will be found, from the following experiments and obſervations, to be void of foundation.

'The only means by which any knowledge reſpecting the irritability of nerves can be procured, muſt be from the operations in ſurgery performed upon nerves, either in a healthy ſtate, or under the influence of diſeaſe; or from experiments made upon animal

animal bodies before they are wholly deprived of life, and instituted for that particular purpose.

'My attention was directed to this subject by the following cases, which explain many circumstances respecting the actions of the nerves when under the influence of disease, and gave rise to the experiments and observations contained in this paper.

'A person thirty-six years of age, naturally eager and anxious in his disposition, whose stomach was peculiarly irritable and irregular in its action, in the winter of the year 1796, while riding in the country, was thrown from his seat by a sudden motion of the horse; and, in endeavouring to save himself, fell with his whole weight upon the end of his thumb, against the pommel of the saddle.

'The part swelled, and became very painful. A few days after, he hurt it again, which prevented the swelling from subsiding, and it remained uneasy and enlarged for three or four months. It afterwards got well, but the motions of the thumb were not always under the command of the will; so that he was sensible, in the years 1797 and 1798, while writing, of finding a difficulty in forming particular letters.

'On the evening of the 16th of October, 1799, which was cold and damp, he was travelling in a post-chaise with two other persons, and let down the window to speak to the driver. A cold wind blew directly into the carriage, and he endeavoured to pull up the window; but, not seeing the glass rise, he looked down, and his hand, instead of pulling up the window, was lying upon his knee. The thumb was bent in towards the palm of the hand; a spasm came upon the muscles of the arm, making them bend the elbow; and immediately he became insensible: in a quarter of an hour he perfectly recovered himself. Some hours after, upon bending his thumb, to shew what had happened to him in the carriage, there was a return of the same attack, which also rendered him insensible for a few minutes.

'From

'From this time, he had no return of these attacks for nine weeks; at the end of which period, on the 18th of December, 1799, he was waving his hand over his head, with a degree of eagerness, as a sign for some people to make haste and follow him; this exertion made the thumb contract towards the palm of the hand, and he fell upon the ground in a state of insensibility. This attack went off as the others had done; he had another in the evening; and, in the course of the next day, two more, equally violent. As the motion of the thumb was the first symptom in all these attacks, the assistants were led to contrive a glove, the front of which was strong enough to resist the motion of the thumb, and to keep it in its place: while this was kept on, the attacks were less frequent. A ligature was then applied round the fore-arm; when the thumb was beginning to be agitated, this was tightened, and the spasms were found to be arrested at the ligature, and of course deprived of their violence.

'From this time, a tourniquet was kept constantly upon the fore-arm; and a person was always in readiness to tighten it, the moment the spasm was expected, which was always preceded by a general feel of uneasiness all over the body: as soon as the spasm went off, which it did instantaneously, the tourniquet was loosened. The spasms in the thumb and fore-arm returned frequently, and at irregular intervals, generally every three hours, sometimes oftener, and once did not come on for thirty-six hours.

'On the third or fourth day, electricity was tried, with a view to relieve them; sparks drawn from the thumb produced tremors in the muscles, which were confined to the thumb. An electric shock through the ball of the thumb brought on a very severe spasm in the arm; but neither sparks, nor a shock through the other thumb, produced any sensible effect.

'On the 29th of December, I first saw the patient; and, after watching the symptoms for three days, made

made the following obſervations upon the complaint.

'That the beginning of the attack was ſome involuntary motion of the thumb and fore-finger; and, therefore, the diſeaſe appeared to be in the branch of the nerve which ſupplies theſe two parts, called by Winſlow, the median nerve.

'That the progreſs of the ſpaſms was in the direct courſe of the trunks of the median nerve, up to the head.

'That compreſſing the parts in the courſe of that nerve, when it was done before the ſpaſms had reached them, always arreſted their progreſs; but, when once the muſcles had become convulſed, or agitated, the ſame compreſſion had no effect in ſtopping the progreſs of the ſpaſms.

'The mode in which the ſpaſms were propagated along the courſe of the nerves was as follows.

'Five or ſix tremors took place in the flexors of the thumb and fore-finger; then ſimilar convulſive motions affected the muſcles of the fore-arm; ſoon after, the muſcles of the arm were thrown into the ſame kind of action; afterwards the pectoral muſcle, and ſcaleni of the neck: the muſcles of the lower jaw were probably in the ſame ſtate, although their action was not within the notice of the by-ſtanders. The head was pulled forcibly to that ſide, in quick ſucceſſive motions, and, in a ſecond or two, the whole ceaſed; the parts became tranquil, the inſenſibility went off, and the patient recovered himſelf: there was, however, a general feel of languor and diſtreſs over the whole body, before the recovery.

'From theſe obſervations, the diſeaſe appeared to be decidedly in the inferior branches of the median nerve; and the irritation was conveyed along its courſe, from its terminations in the thumb and fore-finger, to the origin in the brain.

'It was propoſed to divide the nerve, as it paſſes from under the annular ligament of the wriſt towards

the

the thumb, to cut off the communication between the diſeaſed extremities and the trunk of the nerve, and ſo put a ſtop to the progreſs of the irritation which conſtituted the diſeaſe.

'That ſuch an operation might be attended with ſucceſs, was not only rendered probable from reaſoning, but the performing it was fully juſtified by the ſucceſs which had been experienced from a ſimilar operation, in ſome caſes of the *tic douleureux;* a diſeaſe, in many reſpects, of the ſame nature with the preſent.

'All theſe circumſtances were explained to the patient, who, from a deſire of obtaining relief, conſented to have the nerve divided. This was done on the 1ſt of January, 1800, in the following manner: the nerve, as it paſſes from under the annular ligament towards the thumb and fore-finger, was laid bare, for above an inch in length; it was then detached from its lateral connexions, and, in this expoſed ſtate, a probe-pointed biſtoury was paſſed behind it, and the nerve was raiſed upon the edge of the inſtrument, ſo as to be diſtinctly ſeen by the different medical gentlemen preſent, before it was cut through. As ſoon as it was divided, the two cut ends retracted from one another to a conſiderable diſtance. This retraction was very unexpected, as the nerve was diſengaged from the cellular membrane, and no other part had been divided, whoſe action could make the portions of the nerve recede.

'That nerves, when divided, do retract, is well known in the practice of ſurgery; but this effect has been uſually attributed to the contraction of the neighbouring parts, as the cellular membrane and blood-veſſels, with which the nerves are connected. As none of theſe cauſes could produce the effect in the preſent inſtance, it was natural to ſuppoſe that an independant action exiſted in the nerve itſelf, which had been ſo much increaſed by the influence of diſeaſe, as to become unuſually great; and, therefore, the

the retraction was more distinctly seen than in a healthy state of body.

'The moment the nerve was divided, there was a spasm over the whole body, and a momentary insensibility. The blood-vessels divided in the operation were not secured by ligature, but allowed to stop of themselves, to give the wound every chance of healing by the first intention. The edges of the skin were carefully brought together, and kept in that state by compress and bandage, to promote as much as possible the union.

'For eight hours, after the operation, the parts were perfectly quiet, and there was no spasm. The wound then began to feel hot, as if a red-hot coal had been applied to it. To relieve this sensation, the outer bandage was loosened, and immediately there were twitches in the nerve, which soon went off. The patient felt himself generally unwell, extremely nervous, and irritable.

'Fifteen hours after the operation he had a violent spasm, which went along the arm to the head, but did not affect the brain. In an hour there was a second attack, at which I was present; the pulse was 105 in a minute, the tongue white, a great deal of general irritation, nervous twitches all over the body, but in the greatest degree in the arm and leg of that side. The stiff-fronted glove was now put on, to confine the thumb.

'Twenty-four hours, or one day, after the operation, the first dressings were removed: the thumb was much swelled, and no union whatever had taken place; the spasms returned every five hours, but were less violent.

'The second day, there was no abatement of the symptoms, but the spasms did not affect the brain; they were not now stopt by the pressure of the tourniquet, as they had been before the operation.

'The

'The third day, there were intervals of ten hours between the spasms; and, in the night, they did not extend beyond the elbow.

'The fifth day, suppuration took place in the wound; the swelling in the hand was much abated; and the patient was able to dress and shave without spasm, having only twitches in the fingers, and tremors in the fore-arm,

'The sixth day, there was a burning pain in the hand, and a numbed heavy feel in the thumb and fore-finger, similar to what the patient recollected to have felt four years before, when he hurt his thumb.

'The seventh day, the patient awoke with great pain in the hand, succeeded by a violent spasm, which passed up to the head, although the tourniquet had been previously tightened: after this, he had no spasm for sixteen hours.

'The eighth day, the hand was less swoln and less painful; and he had only two spasms in twenty-four hours.

'The ninth day, the swelling had subsided, and the twitches ceased; in thirty hours, there was only one slight spasm, which did not go beyond the wrist.

'The sixteenth day, the wound was entirely healed; and, as there had been no return of spasms, the patient was considered as well.

'On the twenty-fourth day, which was a fortnight after the spasms had ceased, at nine o'clock in the morning, he was awakened by a violent spasm, which passed directly up to the head, and affected the brain, producing insensibility; this was the only time the brain had been affected since the operation.

'Two days previous to this attack, he had a violent diarrhœa; and, on the preceding day, had undergone unusual fatigue.

'The tourniquet, which had been laid aside, was now applied; and, for the greater security, two were placed

placed on the fore-arm, and one upon the arm itſelf. At ſix in the evening, there was another ſpaſm, attended by inſenſibility, although the tourniquets had been tightened. The hand was found ſwelled, as well as the wriſt, and the cicatrix formed a hard welt, tender to the touch. This hard ſtate of the cicatrix, in which the end of the divided nerve was included, appeared to be a probable cauſe of the return of the ſpaſmodic attacks.

'The twenty-fifth day, the pulſe was 100 in a minute; and, every two hours, there were ſlight ſpaſms.

'The twenty-ſixth day, there were eleven ſpaſms, at irregular intervals, in twenty-four hours, eight of which went up as high as the head. As the ſpaſms were not ſtopped by the tourniquet, as before, it was propoſed to make the preſſure directly upon the nerve: this was done by placing pieces of cork in the courſe of the nerve, and confining them there by the band of the tourniquet, ſo that, when the ſcrew was tightened, the cork was preſſed down on the nerve. This preſſure gave great pain, and, inſtead of arreſting the progreſs of the ſpaſms, ſeemed rather to increaſe their violence; it was therefore left off.

'The twenty-ſeventh day, the pulſe was only between 80 and 90 in a minute; there were ſeven ſpaſms, all of which were arreſted by the firſt or ſecond tourniquet.

'The ſpaſms went on, with very little variation, till the 39th day at ſix o'clock in the morning, when he was ſeized in his ſleep with a violent ſpaſm, attended with inſenſibility, and convulſions over the whole body: theſe laſted for twenty minutes. After his recovery, the hand was found much ſwoln, and the welt formed by the cicatrix was painful. In the courſe of the forenoon he was well enough to bear going out in the carriage; the freſh air always proving very grateful to him.

'From

'From this time, the ſwelling of the hand and the hardneſs of the welt diminiſhed; and the ſpaſms were leſs violent, and ſeldomer. On the 45th day, there was only one ſlight ſpaſm in twenty-ſix hours. In this ſtate he went to the country; and, for the firſt fortnight, the ſpaſms diminiſhed, but afterwards became more violent.

'The return of the ſpaſms after the wound had been healed, made it evident that the operation of dividing the nerve had not anſwered the purpoſe which was expected from it. The failure probably aroſe from the wound not healing by the firſt intention: the conſequent inflammation rendered the cut end of the nerve uncommonly irritable; and, in this ſtate, the confinement in the hard thickened cicatrix rendered it liable to be ſtretched by every motion of the thumb, ſo as to bring on ſpaſmodic contractions.

'From this time, the patient was not under my direction; but I underſtood that he tried the effect of large doſes of opium, which did not afford relief. He was then induced to employ electricity, which was alſo unſucceſsful; and he died in a fit, which at the time was believed to be apoplexy, about five months after the operation had been performed; but, as the body was not examined, the nature of the fit could not be aſcertained.

'In this caſe, ſome of the branches of the median nerve had acquired, from diſeaſe, an unnatural power of contraction, which was made evident by the operation; and there is every reaſon to believe, that the ſpaſmodic attacks which took place were in reality convulſive motions in the nerves themſelves, which excited correſponding contractions in thoſe muſcles that were under their influence.

'This caſe naturally occupied my mind; and I could not avoid dwelling upon many of the extraordinary ſymptoms which made a part of it; but nothing ſo impreſſed itſelf upon me, as the retraction that

that took place in the cut ends of the nerve, at the time of the operation.

'The first idea which suggested itself was, to endeavour to ascertain whether this retraction arose from an increase of a natural action in the nerve, or from one newly acquired, produced by disease.

'With a view to ascertain this point, different experiments were instituted. The object of these was, to determine whether a similar contraction took place in nerves, when divided in a healthy state of the body; the extent of such contraction, if any occurred; and the circumstances by which it may be influenced.

'For the first of these purposes, the following experiments were made.

'*Exper.* 1. The cutaneus internus nerve of the fore-leg of a young rabbit was laid bare, where it passes down before the biceps flexor cubiti muscle: the nerve was disengaged from its lateral attachments; and, while the limb was in a moderately extended state, a probe-pointed bistoury was passed behind it, by which means it was divided transversely. The two ends immediately receded from each other: the upper portion appeared to retract more than the other, and the end lay close to the muscle, in a straight line, while the end of the lower portion was a little bent to one side. The space between them, when measured by a pair of compasses, was found to be $\frac{2}{8}$ of an inch.

'The branch of the musculo-cutaneus nerve, which lies near to the cutaneus internus, was divided in the same manner; and the retraction of the cut ends was found to have been to the same extent.

'In this experiment the limb was extended, although by no means to its utmost limits; it therefore became a question, whether the same degree of retraction would take place in the bent state of the limb.

'To determine this point, the experiment was repeated, after an interval of four days, upon the other

fore-

fore-leg of the ſame rabbit, with the limb in a bent ſtate: the retraction, however, was found to have been exactly to the extent of $\frac{2}{8}$ of an inch.

'From this experiment, made under theſe different circumſtances, a retraction of the cut ends of a divided nerve was aſcertained to take place, which led to the further proſecution of the inquiry.

'For this purpoſe, the phrenic nerve in the horſe was ſelected, as being more favourable, in many reſpects, than moſt others in the body, both from its ſuperficial ſituation in the cheſt, and its great extent without giving off any branches.

'In making experiments of this nature, it is an advantage that the animal ſhould be of a large ſize; and the mode in which horſes are killed in London affords an opportunity of experiments being made on that animal, without giving the operator the painful ſenſations of having made any addition to its ſufferings.

'As horſes are killed at ſtated times only, and theſe occur in a part of the day which is neceſſarily occupied by my profeſſional engagements, the following experiments were made by Mr. Clift, the Conſervator of the Hunterian Muſeum, whoſe accuracy may be relied upon, as well as his abilities in conducting them, having been early initiated, and long experienced in inquiries of this nature.

'*Exper.* 2. Immediately upon a horſe having been knocked down, the thorax was laid open, and the phrenic nerve of the right ſide, paſſing round the pericardium, was expoſed. It was nearly of the ſize of a crow-quill, and ſlightly connected with the pericardium. In this ſtate, the point of one blade of a pair of ſciſſars was paſſed under the nerve; and, by cloſing them, the nerve was tranſverſely divided, without the ſmalleſt diſturbance to its lateral connexions. The two cut ends immediately retracted from each other, leaving the ſpace of one inch between their extremities.

 'This

‘ This experiment was repeated upon a fecond horfe ; and the retraction of the cut ends of the nerve was found to be exactly one inch.

‘ It was repeated upon a third horfe ; and the retraction was found to be nearly two inches. In meafuring the fpace between the two ends of the nerve, the compaffes accidentally touched the lower portion, and the diaphragm was immediately thrown into action.

‘ The refult of this experiment not only confirmed the former, which had been made upon the rabbit, but it proved, in the moft fatisfactory manner, that any action the nerves are capable of exciting is nearly as ftrong after apparent death has taken place from a violence committed upon the brain, as while the animal is in perfect health.

‘ Monfieur Portal, in a paper on a new mode of performing the operation of amputation, publifhed in the Memoirs of the Academy of Sciences for the year 1773, mentions an experiment being made on the fciatic nerve of a dog, in proof of nerves not having a power of retraction, at leaft none deferving of notice*.

‘ This experiment was repeated by Mr. Clift, on the fciatic nerve of a rabbit. Immediately on dividing the nerve, the cut ends receded from one another: but, that the refult might be exactly afcertained, the rabbit was killed half an hour after the experiment was made ; the parts were carefully diffected, and the fpace between the two cut ends meafured ; which was exactly $\frac{6}{10}$ of an inch.

‘ To afcertain whether this retraction was the confequence of a change taking place in the nerve itfelf, or arofe from any other caufe, the following experiment was made.

* ‘ Memoire fur une nouvelle methode de pratiquer l’Amputation des Extrémités, par M. Portal.
Hiftoire de l’Academie des Sciences, 1773. p. 542.

‘ *Exper.*

‘ *Exper.* 3. As ſoon as a horſe was knocked down, the cheſt was laid open, and the phrenic nerve of the right ſide was expoſed: twelve inches in length were immediately meaſured by a pair of compaſſes; and the limits of this portion were marked by a ſmall pin, paſſed tranſverſely through the ſubſtance of the nerve. The part included between the two pins was then ſeparated from the reſt of the nerve in the following manner. The perſon who was to divide the nerve had a pair of ſciſſars in each hand; and, having paſſed the point of one of the blades under the nerve, above the upper pin, and having done the ſame with a blade of the other pair of ſciſſars, below the lower pin, the two pair of ſciſſars were ſhut at the ſame moment, and the nerve at theſe two parts cut through.

‘ This portion was again meaſured, and, inſtead of being twelve inches, was now only eleven and $\frac{1}{8}$; ſo that the irritation produced by dividing it had made it contract $\frac{7}{8}$ of an inch.

‘ This experiment was repeated upon ſeveral horſes; and in all of theſe repetitions there was a contraction produced: this varied in the different experiments, and in ſome of them was only $\frac{3}{8}$ths of an inch. When the nerve was divided very early after the animal had been knocked down, it was the greateſt; and, in proportion to the delay that took place, ſo was the diminution in the degree of the contraction.

‘ In theſe experiments, the nerve, as well as the ſurrounding parts, was diſturbed as little as poſſible, that the reſults might be the more readily and more accurately aſcertained: this, however, makes them liable to an objection, which is, that the contraction might be produced by the cellular membrane ſurrounding the nerve; an objection which certainly can have little weight in the peculiar ſituation of the phrenic nerve, as it lies between the pleura and pericardium, where the cellular membrane can have

little influence over it, while the pericardium is left entire.

'As, however, the opinion of the cellular membrane being the agent by which the retraction of divided nerves is produced has been very generally received, it was highly proper to attend to that circumstance, and have the experiment made in such a way as to prevent any other surrounding part from acting upon the nerve; with this view, the following experiment was made.

'*Exper.* 4. The pleura was removed from twelve inches of the phrenic nerve of a horse; and afterwards the attachments between the nerve and pericardium were completely divided: under these circumstances, this portion of the nerve was separated, as in the last experiment. This portion was again measured, three hours after, in its detached state, and it was found to have lost $\frac{6}{8}$ths of an inch in length. The horse was twenty years old, and was killed on account of its age, which rendered it by no means a favourable subject for such an experiment.

'With a view to determine whether the power of contraction in a nerve continued for any length of time after apparent death had taken place, and also to ascertain what proportion of elasticity a nerve possesses (for every part of an animal body that is not rigid appears to be endowed with it in a greater or less degree), the following experiment was made.

'*Exper.* 5. Eighteen inches in length of the phrenic nerve were measured, and separated by means of scissars: the contraction produced was only $\frac{3}{8}$ of an inch; the experiment being made nearly an hour after the horse was knocked down. Upon being stretched with force, it elongated to $18\frac{1}{2}$ inches; and, on being left to itself, retracted to $17\frac{7}{8}$. It was kept till the next day, and again measured, when it was only $17\frac{5}{8}$: upon being stretched, it was elongated to $18\frac{1}{2}$; but, immediately on being left to itself, it retracted to eighteen inches.

'This

'This experiment was repeated upon another horse; and the result was similar, both with respect to the contraction which took place after the nerve had been removed from the body, and the elongation which depended upon elasticity.

'To ascertain if there was any difference in the appearance of a nerve when contracted, from one in a relaxed state, the following comparison was made.

'*Exper.* 6. A portion of the phrenic nerve, about eight inches long, was removed immediately after the horse had been knocked down. This was allowed to contract; and, after it had remained quiet for twenty-four hours, its external surface was exposed by dissection, so that the appearance of its fibres could be distinctly seen. A portion of the same length was removed from another horse who died a natural death, and these were compared together.

'The difference in the appearance of these two portions was very great: in the contracted nerve, the fibres were all serpentine; in the other, they were straight.

'The serpentine transverse lines described by Monro appear to be an effect of this contraction of the nerve; as they disappear when the nerve is relaxed or elongated *. These serpentine lines in the phrenic nerve, in a man who died of a locked jaw, when examined twenty-four hours after death, were much more distinct and regular than in the phrenic nerve of a man who died of a mortification of his arm.

'These experiments, upon so large an animal as the horse, made by a person well qualified for the pur-

* "When the nerve is fully relaxed, these serpentine transverse lines are best seen; when the nerve is moderately stretched, they are much less evident; when the nerve is greatly stretched, beyond what it ever is in a living sound animal, it appears uniform in its colour and consistence.---Hence these lines are, in the *first* place, to be considered as folds or joints in the nerve, and may be compared to the lines in the palm of the hand, serving to accommodate the nerve to the different states of flexion and extension."——(In a note.) "By soaking in water, this appearance is lost." *Monro on the Nervous System*, p. 39.

 pose,

pose, and repeated sufficiently often to preclude any material fallacy, admit of the following conclusions being drawn from them.

'1. That the nerves of an animal in health are capable of retracting themselves when divided; and that this effect is intirely independent of the parts by which they are surrounded.

'2. That this contraction takes place in the nervous fibres themselves; and is independent of the brain, from which they originate, and of the muscles and other parts in which they terminate.

'3. That the contracted nerve exhibits to the eye an appearance of contraction in its fibres, not to be seen when it is in a relaxed state.

'As the nerves are so readily influenced by electricity, in exciting the muscles to action, it naturally suggested itself, that some further information might be obtained in the present investigation, by means of experiments made upon the nerves by the electric fluid. With this view, the following experiments were instituted; and Mr. Carpue very obligingly assisted Mr. Clift in making them, and carried one of Mr. Cuthbertson's large plate-glass electrical machines to the slaughter-house for that purpose.

'*Exper.* 7. A portion of the phrenic nerve, twelve inches long, was exposed, and divided at both ends, as in the former experiments. When it had contracted to 11$\frac{1}{8}$, a strong electric shock was passed along its substance, from one end to the other; but, when measured again, the length was exactly the same. The portion of nerve was then dissected out, and laid upon a piece of glass; in its detached state, it measured 11$\frac{5}{8}$. Several strong electric shocks were passed through it, in the direction of its fibres; but they did not produce the smallest effect upon it.

'This experiment was repeated upon another horse, and the result was the same.

'*Exper.* 8. Half an hour after a horse had been knocked down, 24 inches in length of the nerve called

par-

par vagum were laid bare, and a portion of it detached from its lateral connexions, ſo that a piece of glaſs, 12 inches long, was admitted under it, without dividing the nerve from the trunk; in this ſtate, electric ſparks were drawn from it, and ſeveral ſtrong electric ſhocks paſſed through it; but there was not the ſmalleſt change to be perceived, either in its length or appearance.

'From theſe experiments it appeared, that when the nerve had contracted itſelf, in conſequence of being divided, no increaſe of that contraction was produced by the electric fluid.

'To aſcertain whether electricity was capable of exciting contraction in a nerve that had not been previouſly irritated, the following experiment was made.

'*Exper.* 9. Twelve inches of the phrenic nerve were meaſured; and the limits of that portion marked, by pins ſtuck through the nerve. This portion of nerve, in its relaxed undiſturbed ſtate, had electric ſhocks paſſed along its ſubſtance; but theſe were found, upon meaſuring the portion of nerve, to have produced no contraction in its length. When this portion was ſeparated, as in the former experiments, it contracted to $11\frac{3}{8}$ inches; a diminution of $\frac{5}{8}$ of an inch.

'The electric fluid, in this laſt experiment, excited the action of the diaphragm, but produced no evident or permanent contraction of the nerve; and, when the nature of a contraction of the nerve is conſidered, it is not to be expected that permanent contraction can be aſcertained in any other way than by ſeparating intirely a portion of nerve from the reſt of the ſyſtem. For the action is continued in tremors along the nerve, in quick ſucceſſion; and, when the muſcle has been excited to contract, the complete action of the nerve is finiſhed, and it immediately relaxes, or returns to that ſtate which admits of a new action.

'This

‘ This appeared to be the case in several experiments made upon the nerves of frogs, and of quadrupeds of a higher order, by two different metals, as described by Galvani. In all of them, there was a convulsion of the muscle, and a tremor in the nerve; but, such was the rapidity of the effect, that it could not be decided that any motion took place in the nerve, except what arose from the agitation produced by the action of the muscle.

‘ The experiments and observations which have been related appear to illustrate an action in the nervous chords, capable of producing the symptoms which occurred in the case related in the former part of this paper, and also those met with in many other diseases, the symptoms of which have never been satisfactorily explained.

‘ The hypothesis of a nervous fluid, although it may explain every symptom which originates in the brain, and from thence pervades any part of the system, and every symptom which begins in the extreme parts and goes to the brain, does not give a satisfactory solution of those nervous agitations brought upon an extreme part, which only proceed for some way in the course of the nerve, and are there arrested, without being allowed to proceed to the brain.

‘ The circumstance of the nerves having been divided, and their functions being restored twelve or twenty-four months after, when the two cut ends have been united by a new substance, is a strong argument against the circulation of a nervous fluid; since no such effect takes place in the pervious canals of the body.

‘ In many diseases, there are symptoms so decidedly confined to the course of the nervous chords, that an impartial observer would be unable to account for them in any other way than by supposing them to arise from some action in the nerves themselves.

‘ This idea must have been strongly impressed upon the mind of Dr. Mead, who, in treating of his third sort

ſort of quincy, ſays, all the nerves are convulſed, and the patient drops down dead ſuddenly *.

'The *tic douleureux* is a remarkable inſtance of this kind, both in the circumſtances under which the ſpaſmodic tremors are brought on, and the manner in which they are propagated along the nerve.

'In one caſe of this diſeaſe, in which the operation of dividing the nerve was performed, with a view to remove the complaint, union by the firſt intention did not take place; and, during the time the wound was open, the inflamed ſtate of the cut end of the nerve made the patient liable to ſeveral attacks of the diſeaſe, ſimilar to thoſe he experienced before the operation; but there was no recurrence of them after the wound was completely healed.

'This is a very important fact; as it proves that inflammation on the cut end of the nerve, while in an irritable ſtate, is capable of producing exactly the ſame ſymptoms as the original diſeaſe. This effect of inflammation upon the end of the nerve explains the ſtartings of the limb which occur too frequently after amputation.

'Theſe moſt commonly are met with when the limb is taken off above the knee, and the nerves and veſſels have been previouſly inflamed higher than the part at which they were divided; and where the nerve is confined by the thickened ſtate of the ſurrounding parts.

'The ſame fact alſo explains the cauſe of locked jaw, when it is produced by a wound or bruiſe upon a nerve, in a conſtitution either rendered irritable by climate, or naturally ſo; alſo where the nerve itſelf becomes diſeaſed, in conſequence of the accident.

'The following caſe of locked jaw, from an injury to the thumb, bears ſo great a reſemblance to

* 'Mead's Præcepta Medica. Quarto, p. 434.

the

the caſe related in the beginning of this paper, as to ſhow that the diſeaſes muſt be nearly allied.

'A lady of a very irritable habit was overturned in her carriage, and hurt her thumb, which ſwelled very much; and the ſkin over the metacarpal bone of the fore-finger, about the ſize of a ſhilling, ſloughed off. No ſymptoms came on for fourteen days after the accident, when, upon bending her fingers, violent ſpaſms took place in the thumb, which proceeded up to the neck and lower jaw; theſe were exceedingly painful, and the jaw was ſo much ſhut as hardly to admit a tea-ſpoon. In fourteen days more, the jaw began to open; and, for a month longer, there were only two or three ſpaſms daily in the thumb, attended with pain; theſe went up the arm to the jaw. At the end of that period, the ſore on the back of the hand healed, and ſhe recovered perfectly from the ſpaſmodic affections.

'To enter further into the hiſtories of caſes which afford evidence of a morbid action in the nerves, would be treſpaſſing too far upon this learned Society, and would render the preſent paper an inquiry into medical facts, which is only intended to be an inveſtigation of the natural actions of the nervous fibres, illuſtrated by the phænomena which occur while theſe chords are under the influence of diſeaſe.'

The remaining articles will be noticed in our next number.

ART. XIX. *Traitè d'*HIPPOCRATE *des Airs, des Eaux, et des Lieux, &c.* HIPPOCRATES' *Treatiſe de Aeris, Aquis, et Locis; a new Tranſlation, with the Greek Text annexed; with Notes critical, hiſtorical, and medical; a preliminary Diſcourſe, a comparative Table of the antient and modern Winds, a geographical Chart, and the neceſſary Indices.*

Indices. By Coray, *M. D. of the Faculty of Montpellier.* 8vo. 2 vols. price 15 francs. Paris.

THE influence of *climate* on the phyfical and moral habits of man, and confequently on his deftinies, is univerfally admitted. The confideration of this has ferved as the bafis of *Montefquieu*'s great work on legiflation: yet it is remarkable, that, with all its importance, the fubject has been handled by no writer with fo much fuccefs as by the Father of Medicine, in his Treatife *de Aeris, Aquis, et Locis*, written more than two thoufand years ago. This work of *Hippocrates* is the moft ftriking proof of his genius and talent for obfervation, that has come down to us. Much pains have been taken in the prefent tranflation by Dr. *Coray*, to render a faithful and accurate edition of this valuable work, which he has illuftrated by numerous and extenfive notes. Thefe notes are of two kinds; in the firft, he difcuffes the difficult paffages in the text, and the readings in different manufcripts and different editions; and affigns the motives for the corrections which he has adopted or propofed. In the fecond order of notes, the tranflator endeavours to illuftrate the principles of *Hippocrates*, and the moft effential points of his doctrine, by a variety of facts and paffages extracted from the writings of travellers, from thofe of the moft diftinguifhed modern phyficians, or from the memoirs of different learned focieties.

The preliminary difcourfe, which occupies more than half of the firft volume, contains, befides a defcriptive table of contents, and a refutation of the objections which fome practitioners have made to the doctrines of this great man, an interefting differtation on the names given by the Greeks, at different periods, to the moft remarkable winds; and a comparative table of the antient and modern divifions of thofe winds. The difcourfe is terminated by a critical notice of the various manufcripts and editions, both

both Greek and Latin, that have preceded the prefent tranflation, and an eftimate of the degree of confidence which the manufcripts he has had occafion to confult, and the different editions, and commentators, appear to him to merit.

Art. XX. *Obfervations on the medical and domeftic Management of the Confumptive; on the Powers of Digitalis Purpurea; and on the Cure of Scrophula. By* Thomas Beddoes, *M. D.* 8vo. 394 pages, price 7s. London, 1801. Longman and Rees.

THE fhort period which has elapfed fince the appearance of the author's former effay on pulmonary confumption, might lead to the fuppofition, that the prefent work was merely a popular expofition of the principles and practice before inculcated. This conclufion, however, would be found wide of the truth; for the Obfervations before us are characterifed by confiderable novelty, the refult, apparently, of later reflection and experience. Pulmonary confumption certainly exifts under very different characters in different individuals; and it becomes a matter of the higheft moment to difcriminate between the various fhades of the difeafe. The neglect of this, no lefs than an inefficient and injudicious employment of remedies, which, with proper management, are capable of producing the moft favourable changes, will readily account for the contradictory teftimonies that exift with regard to the efficacy of digitalis, and fome other fuppofed anti-phthifical remedies. It would argue a degree of fcepticifm the moft obftinate and irrational, after the evidence which has lately been adduced, to deny the curablenefs of pulmonary confumption, in fome of its ftages at leaft; and who fhall fet limits to the powers of the medical art, found-
ed,

ed, as it muſt be ſooner or later, on accurate obſervation and cautious experiment, and on more enlarged views of the animal œconomy? It becomes us, therefore, to receive with candour, and to examine without prejudice, every new propoſal for relieving ſo formidable and fatal a diſeaſe; and though many diſappointments occur before certainty is arrived at, we ſhould conſider every effort as an approach towards truth, which aſſiduous and continued inveſtigation will enable us ultimately to attain.

The work before us will be in ſo many hands, that a minute account of it here might be thought ſuperfluous. The great importance of the ſubject, however, and the value of many of the facts it contains, are ſufficient motives to induce us to contribute towards its general publicity. It commences with conſiderations on a modified atmoſphere in conſumptive caſes. The effects of temperature, the author obſerves, though important in all diſeaſes, have hitherto received but ſlight attention: of courſe, the means of applying heat and cold, generally or partially, have been very imperfectly provided for medical uſe. In conſumption, the effect of temperature is not doubtful. Steady warmth creates an exemption in favour of thoſe who would become its prey in a variable climate. The diverſity of our own ſeaſons makes a difference in the frequency of the diſeaſe. Caſual obſervation evinces, that in many inſtances the cough is much aggravated on reſpiring a colder air; and a perſuaſion has long prevailed, that reſidence in hotter climates is beneficial to invalids. Theſe conſiderations induced the author to pay all the attention he was allowed to pay to temperature; but he has never dared, he remarks, to truſt his phthiſical patients to warmth alone; hence he has none of thoſe pure experiments to relate which are ſo deſirable, but ſo difficult to obtain, in medicine. In the courſe of his obſervations, however, the effect of temperature was ſufficiently diſtinct.

Four

Four cafes are related, where refidence in a cow-houfe was reforted to; and though it does not appear that complete cures were effected in any of them, indifputable evidence is brought forward of relief having been afforded to the moft diftreffing and dangerous fymptoms; the oppreffion of the cheft, the hectic fymptoms, the night fweats, the cough and expectoration, the general reftleffnefs, and, in one cafe, the oedematous fwelling of the ankles, were all remarkably relieved under this plan. Two of the patients are living evidences of the benefits thus received, though they both remain in a valetudinary ftate, and may ultimately, perhaps, fall victims to this relentlefs malady. Two other confumptive patients lived with cows for about three weeks each. One felt much relief at firft; but the approach of winter reduced the temperature of each place, during the latter days of their refidence, as low as 54°. They were now difagreeably affected by the cold; and their friends, rather than be at the expence of the meafures neceffary for producing fufficient warmth, removed them: the author believes they both died.

Not being able to perfuade himfelf that the favourable effects produced upon phthifical invalids in a cow-houfe were owing to any caufe but to temperature, and to the gafes given out by the fermenting mafs of vegetable and animal fubftances, the cows were excluded in one inftance, and all the other parts of the plan retained. The effects were decidedly favourable, though not abfolutely curative; but it does not appear that the treatment was perfevered in for a fufficient length of time. In other cafes, not phthifical ones only, the effects of a regulated temperature were moft ftrikingly evinced; and they fhew that much may be hoped for, in the treatment of various difeafes, from this fource.

The following cafes, which we felect as ftriking ones, will ferve to fhew what degree of benefit may be expected from an increafed and well-regulated temperature:

temperature: the conjoined employment of other remedies, we apprehend, by no means renders queſtionable the effects of temperature ſimply.

'John Billingſley, Eſq. of Aſhwicke Grove, Somerſetſhire, had complained of a ſhort cough, in the beginning of the winter of 1799, and 1800. This continued, and began by degrees to be accompanied by feveriſh feelings. Afterwards expectoration took place. All theſe complaints went on, increaſing in regular progreſſion, till March 1800, when I firſt ſaw Mr. Billingſley. I found him, in the evening, with a pulſe at about 120 in a minute, complaining of cough, pains in the cheſt, difficulty of breathing, chills, heats, and moſt profuſe nocturnal perſpirations. The expectoration amounted to ſeven ounces in twenty-four hours, and conſiſted of purulent matter, largely intermixed with mucus. Mr. Billingſley was exceſſively reduced in ſtrength, and much emaciated.

'Had it been left to my choice, as influenced by my expectations reſpecting the event, I ſhould certainly have declined the care of a perſon, to whom the eyes of people in this part of England are ſo generally turned.

'To his two medical friends, Mr. Perkins and Mr. Hill, as alſo to his family, I ſtated, that he appeared to me verging faſt towards the laſt extremity, if the caſe were not already deſperate.

'To himſelf, at their deſire, I explained, as well as I was able, the nature and probable comparative efficiency of the meaſures that might be adopted for his recovery. I told him that I had no expectation from any medicine but digitalis, occaſionally aſſiſted by other articles of the *materia medica*; but that I was by no means willing to truſt to medicine alone. The auxiliary means I had in view were of two kinds:—a room, ſimply heated to above 60°; or a heated atmoſphere, impregnated with the exhalations of the cow-houſe. A third, and in my opinion the only plan remaining, was a long ſea voyage. This

Mr. Billingsley at once absolutely rejected, adding, that he should prefer the temperated room; but apprehended that he was too weak to bear removal to Clifton, a distance of about twenty miles.

'It was finally concluded that the attempt should be made, and that a room should be fitted up. The stove supplying hot air being placed in the bed-room, and a common fire occasionally made in the sitting-room. The stove, as in all the other cases, except the cow-house cases, was one of those called *empyreal* stoves. It was twelve inches square; and the expence of boring a hole to receive the air-pipe, and closing the apertures in the door, added to eleven guineas, the original price, amounted to about fourteen pounds. It was found easy to keep up the fire all night; and during the whole twenty-four hours the most perfect equality of temperature could be maintained. The heat most agreeable to Mr. Billingsley was from 60 to 65°.

'He began to take ten drops of saturated tincture of digitalis, twice a day, two or three days before taking possession of his apartments. In nine days the chills, heats, nocturnal perspirations, and cough, were sensibly abated. The appetite had greatly improved. The pulse had fallen to abont 90 in a minute.

'In a fortnight Mr. Billingsley found himself much stronger. He never took for a dose above eighteen drops of the tincture of digitalis, and sometimes only two doses a day; to the last of which was usually added from twelve to twenty drops of the tincture of opium, or corresponding quantities of camphorated tincture of opium.

'It may be remarked that Mr. Billingsley's strength, appetite, and spirits, improved at an equal rate. At no time did he experience the smallest disagreeable sensation, either from his confinement or his medicine.

'When he had been under this treatment for a little more than three weeks, he proposed to go to

Ashwicke

Aſhwicke Grove, on condition that the weather was fine, for a ſingle night. The reaſon for this journey being important, my ſcruples were over-ruled. He performed it with the moſt perfect eaſe and impunity; and from that time took an airing during the ſunny part of ſeveral fine days.

'This is an important fact, as it ſhews that the danger is leſs than might be apprehended, from paſſing into a lower temperature from a higher, to which a perſon with a diſeaſed breaſt has been for ſome time accuſtomed.

'Such precautions as warming, to an unuſual degree, the apartments which might be uſed for ſitting or ſleeping, were of courſe employed: and the cooler air after ſun-ſet was avoided. Still, however, Mr. Billingſley, during his abſence, muſt have been immerſed in an atmoſphere 20° colder than that of his apartments.

'After a confinement of about ſix weeks, the hectic fever being entirely ſubdued, the cough and expectoration much reduced, Mr. Billingſley quitted his confinement. He perſevered for ſeveral weeks longer in the uſe of digitalis, and entirely recovered in all reſpects. The recovery, as far as the experience of near a year, including a whole winter paſſed without any particular precautions, can juſtify an opinion, appears to be permanent.

'No inconvenience whatever was felt from expoſure to the common atmoſphere.

'A lady, twenty-two years of age, with narrow cheſt, prominent ſhoulders, and hereditary diſpoſition to conſumption, after a ſhort cough of many weeks' continuance, and ſlight irregular feveriſh feelings, began to expectorate purulent matter, and to complain of conſiderable ſhiverings in the evening, ſucceeded by a dry burning ſkin, and profuſe night perſpirations. She could not lie on one ſide, and her fleſh and ſtrength declined with the greateſt rapidity.

 'Fearing

‘ Fearing that digitalis alone, which had been tried, but as I thought not with ſufficient attention to the doſe in a delicate conſtitution, would fail to produce a cure, I inſiſted upon the neceſſity of a temperated atmoſphere; and my remonſtrances ſucceeded.

‘ By means of four drops of tincture of digitalis, thrice a day at firſt, and afterwards from ſix to eight (beyond which I never could riſe, without langnor, inappetence, or ſickneſs), the progreſs of the diſeaſe was ſenſibly arreſted in about three weeks. In five weeks the hectic fever had nearly ſubſided; the expectoration and cough were greatly leſſened; and by actual meaſurement of the arm, an increaſe of fleſh was aſcertained.

‘ In three weeks more the complaint was ſo far abated, that the patient ſpent the greater part of the fine days of April out of doors; and by degrees returned to the uſe of the common air.

‘ All the ſymptoms of the diſeaſe diſappeared, and they have not ſince returned’

Two other patients, the author obſerves, under the ſame treatment, experienced the ſame happy effects. It was remarked by all of them, that the ſtillneſs of the air became much more agreeable than the currents and the unequal application of the heat from a common open fire. In one inſtance, no advantage whatever was derived from the practice. Although many of the caſes treated in this way terminated fatally at laſt, they are, in reality, the author obſerves, more encouraging than would appear without attention to the degree of the diſeaſe. All the patients had been long ill; they had already baffled the perſevering efforts of medical practitioners; no conſiderable relief was expected for them, much leſs a cure. They are not to be conſidered as taken promiſcuouſly from the main body, but as belonging to the forlorn hope of the conſumptive.

In

In the fecond divifion of his work, the author treats of the power and agency of digitalis, an article of the *materia medica*, whofe virtues are yet ill underftood. In cafes of tubercular confumption, not advanced to the ulcerative ftage, and where no peculiar difadvantages of fituation in life counteract the remedy, he ftill thinks that, in his former ftatements on this fubject, he has not over-rated its virtues; and feveral cafes are here adduced in fupport of this affertion. The following, we imagine, will hardly be denied to be a cafe of incipient phthifis at leaft; nor does the curative effect of the remedy appear more queftionable.

'Mr. Charles Torin, æt. 22, of a thin habit and dark complexion, with dark hair, after fpitting blood, was troubled with cough, purulent expectoration, chills, heats, and night-fweats, with difficulty of lying down on one fide, and a pulfe at 112: he had loft flefh and ftrength progreffively.

'Before coming to the Hot Wells, in January, 1800, he had been under the care of a very fafhionable phyfician, by whom he was kept on the moft flender diet, and by whofe order I underftood him to have taken acid and neutral faline medicines, without any benefit whatever. After examination of a patient fo far reduced, in whofe family alfo the difeafe under which he laboured had committed great ravages, I conceived very flight hopes of fuccefs. The tincture of digitalis was however prefcribed, and perfevered in, with variations of the dofe. Opium was alfo given, in about the quantity of a grain at night.

'The fymptoms, in a fortnight, were fenfibly lefs fevere; the hectic fever, foon afterwards, was entirely removed.

'In fix weeks Mr. Charles Torin left the Hot Wells, nearly reftored to his natural ftrength, and with no fymptom of his former complaint, except a little expectoration. This, on continuing the digitalis two months longer, gave way.

 'At

'At the end of above a twelvemonth I faw my patient perfectly well; and in this ftate he failed for the Eaft Indies about a month ago.'

The author obferves juftly, however, that peculiarity of habit and of fymptoms make confiderable difference in the proper employment of digitalis, and frequently call for a combination of means to enfure fuccefs. We would recommend the attention of the reader efpecially to this part of the work.

Some fpeculations follow on the mode in which digitalis operates in the fyftem. In regard to the operation of medicines generally, the author feems to lean to the animo-chemical (not the humoral) theory. 'To whatever organ,' he obferves, 'medicinal application is made, I confider the applied fubftance as a chemical compound. The organs themfelves I confider likewife as chemical compounds, extremely variable, and of a peculiar nature for the time being. We know that certain changes in thofe organic compounds which are firft affected, will produce fucceffive changes in connected parts, till perhaps the whole frame undergoes a change in its compofition, and confequently in its actions. Some effects of thefe changes will be manifeft; others more obfcure; and others not afcertainable by any of our prefent methods of obfervation.' If this is the light the fubject ought to be viewed in, and changes in the compofition of the fyftem, rather than in its actions, are to be confidered as the primary effects of the application of remedies, the reduction of medicine to a fcience is a hopelefs tafk indeed! Changes of the moft important kind take place in the body, with regard to its functions, without manifefting themfelves by any figns cognizable to the fenfes; and to what proceffes in chemiftry fhall we recur, which may indicate their nature and exiftence? It is too true, as the author remarks, that we have fcarcely advanced a fingle ftep in vital chemiftry. We are not acquainted with the conftitution of any one organ in any one of its conditions. We

know

know nothing of the difference between the feveral conditions compatible with life. Changes in the living actions foon follow the application of remedies, and in general long before any alteration in ftructure or in compofition are perceivable, which, in many cafes, are never obvious to the fenfes. It is the former, therefore, that are the proper fubjects for obfervation, unlefs chemiftry could lead us to a knowledge of the latter, which it has not yet done.

With regard to the action of digitalis, the author is difpofed to regard it as a ftimulant and tonic, rather than as a fedative remedy, as has been commonly held. Reduced frequency of the pulfe, he obferves, from the operation of digitalis, is always accompanied by increafed momentum; and an inftrument is hinted at, for meafuring the force of the arterial pulfations, by means of which he has afcertained, he thinks, a very confiderable augmentation of ftrength of pulfe, under a guarded adminiftration of digitalis, fo given as not to induce ficknefs or languor. That digitalis will increafe the power of the ftomach is inferred from obferving the appetite of many phthifical patients increafed under its ufe; and the author has accordingly given it in feveral cafes of dyfpepfia, with the beft effect. In nervous atrophy, accompanied with exceffive fenfibility, fever, evening exacerbations, and wafting of the flefh, without local injury to any of the vifcera, it was found equally advantageous, producing effects very fimilar to opium, to which, indeed, it appears to be nearly allied in its mode of action.

Obfervations on the cure of fcrophula next follow. The object of thefe is to recommend to the notice of practitioners a remedy, which, from the evidence here adduced, appears to be of the moft promifing kind: this is, the *muriate of lime*, confifting of a faturated folution of lime in the muriatic acid, or common *fpirit of falt*, of the fhops. The dofe has been from ten drops for young children, to two drachms for adults,

three or four times a day. A drachm, diluted with water, is conſidered as a medium doſe. Five caſes are given in detail, where the good effects of this remedy were very ſtrikingly ſhewn; but the author has given it to near a hundred patients, in various conditions of life, and there are very few, he obſerves, of the common forms of ſcrophula, in which he has not had ſucceſsful experience of the muriate of lime.

The following caſe deſerves to be recorded, on more than one account.

‘ Caſe 4. Laſt ſpring a young lady was placed under my care; on examining whoſe ſituation I was ſtruck with deſpondency. The intelligent reader will perceive from the ſubſequent account, for the firſt part of which I am indebted to the father of my patient, Thomas Johnes, Eſq. M. P. of Hafod, Cardiganſhire, that I had ample cauſe for this feeling.

“ 1795—M. J. had a worm complaint. The apothecary deſtroyed the worms, but was ſaid to have left their exuviæ behind, probably from want of purging phyſic.

“ 1796—In the ſpring carried her to London; put her under Dr. P——'s care. He gave her very ſtrong calomel medicines, which carried away every thing. On her return, her aunt Eliza perceived ſhe could not walk ſo well as uſual.

“ In September, Mrs. H. Williams's maid perceived a diſtortion of the ſpine. I was at Cardigan aſſizes. On my return ſent for Dr. Davies He ſaid there had been diſcovered a cure by Pott, viz. ſetons or iſſues in the back. He made two iſſues by the cauſtic of lime.

“ Dr. Davies ſaid, Jones's ſpinal ſtays were good things, and wrote to him for a pair; which, however, were never put on.

“ Mr. L——, ſurgeon in London, came to Aberyſtwith, from thence here. He approved of the iſſues: but ſaid they muſt be enlarged. He enlarged them

them with cauftic, fo that each held nine beans. The patient fuffered very much. In the beginning of winter we went to Bath, where Mr. L—— came to fee her twice. He faid nothing could do but the iffues. She was under Mr. ——'s fubordinate care at Bath, who did not feem to think fhe was going on well, yet did not choofe to fpeak out.

" Mr. Earle coming to Bath, he was confulted, and faid every thing was going on well; though to all our eyes fhe feemed very indifferent.

" Mr. L—— came again before we left Bath, and laughed at the idea of Jones's ftays. Said the fea-bathing would effectually cure her; and ordered her to be plunged in, the firft warm day after our arrival.

" 1796—In the fummer we came to Aberyftwith, and the fea-bathing made her fo very ill and infirm, that, on Dr. Davies being called in, he declared that Jones muft be immediately fent for. He was fo; and his ftays had not been put on an hour before fhe could walk; though before her legs were ufelefs, and fo infenfible, that to all appearance a paralytic affection had feized on them.

" 1797—We returned to Hafod in the autumn. We continued here, attended by Dr. Davies; but in the fpring a fwelling appeared, which *all* the learned declared to be a pfoas abfcefs; nay, a furgeon wanted to open it directly. But Dr. J. E. Smith, being here, would have Dr. Davies fent for, and he would have Mr. Abernethy come here. He did fo; declared it a pfoas abfcefs, that was not yet ripe, but would be fo in two months; when he would return.

" All this year we continued very uneafy about this abfcefs.

" 1798—Remained at Hafod, with various hopes and fears. This abfcefs was difperfed, contrary to the declared opinion of —— ——, who faid it was impoffible.

" Don't let law claim alone a *glorious uncertainty.*

" 1799

“ 1799—At Hafod, ſometimes better, at others worſe. Attended, however, by Jones with his ſtays, this as well as the ſucceeding year.

“ 1800.—Early in the year a fortunate pleuritic fever ſeized her, which drove us to Briſtol. The reſt you know; and thanks to you, under a moſt merciful Providence, ſhe is reſtored.

“ T. J.

“ *Hafod, May* 1801.”

Beſides the ſymptoms abovementioned, there were a lymphatic gland in the arm, and a ſubmaxillary gland, in ſuppuration, and the ſtrength was exceſſively reduced. There were hectic ſymptoms, a ſhort dry cough, and difficult reſpiration. In about a month, from the uſe of the muriate of lime, about a drachm thrice a day, in water, either acidulated with muriatic acid, or in weak infuſion of colombo, the ulcerated glands had healed, and the other ſymptoms were much mitigated. The medicine was continued for above a twelvemonth, and there was a conſtant improvement, till full health ſeemed reſtored.

In order to aſcertain whether an over-doſe of the calx muriata would be attended with danger, an event that might be apprehended from the analogy of barytes, three drachms and a half of it were given, undiluted, to a dog. The animal was violently affected, and died in ſix hours after. The internal coat of the ſtomach was found exceedingly blood-ſhot, nearly black, and converted into a gelatinous matter.

The Appendix, No. 1. contains ‘ Caſes and Obſervations on the medicinal Efficacy of Digitalis Purpurea in Phthiſis Pulmonalis, with Speculations on its Modus Operandi, and on analogous Remedies.’ By Dr. *Kinglake*. A conſiderable number of caſes are here narrated of pulmonary affection, and which the author conſiders, certainly not without probability, as incipient caſes of phthiſis, in which the digitalis was productive of conſiderable advantage, and

in

in many of them effected a complete cure. But whilst Dr. Kinglake's experience authorizes him to state the curative powers of the digitalis, in the incipient or tubercular stage of consumption, in the proportion of one in three of the cases that occur, he candidly acknowledges, that, in the ulcerated stage, no instance has occurred to him, at the Pneumatic Institution, or elsewhere, of a cure having ultimately been effected.

With regard to the *modus operandi* of this remedy, Dr. *Kinglake*'s opinion does not differ materially from that of Dr. *Beddoes*, given above. He considers it 'as a powerful narcotic stimulant, capable of impressing the stomach with additional motive energy, which, through associated influence, is propagated over the system, and more particularly exerted on the heart and arteries, by which are distributed to every part of the frame an increased quantity of oxygenous and other vital principles, which may be necessary to retrieve and establish, both locally and generally, the healthy conditions of life.' On this principle, he observes, it is obvious that its virtues should be exclusively manifested in diseases of debility—but is it so? we would ask. Is it a probable remedy in typhus fever, in scurvy, or in cases of more simple debility, if such there be? A number of objections might be offered to this view of the question, as well as to the supposed passive condition of the lymphatic vessels in the living body. It would be no difficult matter to shew that the phenomena of absorption can in no way be explained or accounted for, without allowing to these vessels the contractility and independent action assigned to them by Mr. Hunter and other distinguished physiologists.

App. No. 2, is a translation of a paper by Prof. *Harles*, of *Erlangen*, extracted from *Hufeland*'s Journal, giving an account of the efficacy of what is termed the *oleum hyosciami* in hæmoptoe. The mode of preparing it is to boil two ounces of the fresh leaves

of

of henbane, bruised, in eight ounces of olive oil. Of this, one part is mixed with two of oil of olives or of almonds, and three or four tea spoonfuls of the mixture taken twice or thrice a day.—Allowing the henbane to be as useful in hæmoptoe as here stated, the preparation is certainly an unfit one, as liable to great uncertainty in point of strength. Oil is a very imperfect solvent of the gum-resinous or mucilaginous juices of vegetables, in which their active properties mostly reside.

App. No. 3, treats of the use of certain external applications in consumption. Blistering, according to the author's experience, has been of little advantage, where tubercles exist. The happy effects of issues in disorganizations, nearly as far below the common integuments as tubercles sometimes are, led him to hope more from their use; and some cases are here related where they were productive of decided advantage.

A case of confirmed consumption is mentioned, where the exacerbation of hectic fever was marked by *increased force* of the pulse, without any increase of frequency.

Art. XXI. *Annals of Philosophy, Natural History, Chemistry, Literature, Agriculture, and the Mechanical and Fine Arts.* For the Year 1800. *By* T. Garnett, *M. D. F. L. S. Prof. of Nat. Phil. and Chem. in the Royal Institution of Great Britain**; *and other Gentlemen.* Vol. I. 8vo, 488 pages, price 10s. 6d. London, 1801. Cadell and Davies.

COMPENDIOUS publications of the nature of the one before us, are always interesting and useful to a certain class of readers; and they have

* Dr. G no longer holds the situation of *Professor* in the *Royal Institution.* The managers have lately appointed Dr. *Thomas Young*, a gentleman eminent in various branches of science, to that office.

acquired

acquired additional importance, by the late advances in the price of all forts of literary works. It is now in the power of few to have recourfe to the original volumes that iffue from the prefs: and concife and abridged defcriptions are become indifpenfable. With regard to the prefent collection, different perfons have been engaged in drawing up the different articles; no individual being equal to the tafk of compiling the whole. We fhall have occafion merely to point out the general plan of the work, and its arrangement: the articles which have any relation to medicine have, with very few exceptions, been already before our readers.

The volume is divided under three general heads, *fcientific*, *literary*, and *mifcellaneous*. Under the firft is given an account of difcoveries in natural philofophy, natural hiftory, and chemiftry. The fubject of galvanifm naturally engages a confiderable fhare of the compiler's attention: the account here given of it, however, is by no means complete. The article which exhibits the ftate and improvements in chemiftry, appears to have been drawn up with much care, and is perhaps the beft in the volume.

In the fecond, or literary department, is given an account of Englifh and foreign literature, the former claffed under general heads of fciences, in alphabetical order. This part of the work can be confidered as little more than a lift of titles and prices, or at beft what the French term *catalogue raifonée*; the compiler, however, feems to have fpared no pains to render his lift of publications complete, as every thing feems to be included*, from the *Philofophical Tranf-*

* From this muft be excepted, however, the *Medical and Chirurgical Review*, which the compiler has not thought it neceffary to notice amongft the other medical journals. It is difficult to find a motive for this *exclufive* favour fhewn to us. Dr. G. certainly was not ignorant of its exiftence: he knew its title to impartiality, and its favourable reception amongft the moft refpectable of the profeffion. One reafon, indeed, may be affigned: the ceffation of the doctor's functions at the *Royal Inftitution*, has perhaps left him leifure to form engagements with publifhers of other periodical works.

actions,

actions, to the new edition of *Joe Miller's Jeft Book,* which, we are informed, is printed (with new jefts) for *Weft and Co.* price 1s.

The third, or mifcellaneous part, contains an account of the improvements which have lately been made in agriculture and the arts. An obituary of literary characters terminates the volume.

ART. XXII. *Annals of Infanity, comprizing a Variety of Select Cafes in the different Species of Infanity, Lunacy, or Madnefs, with the Modes of Practice, as adopted in the Treatment of each. By* WILLIAM PERFECT, *M.D. of Weft Malling, in Kent, &c.* 2d edition, *revifed, corrected, and confiderably enlarged.* 8vo. 412 pages, price 6s. London, 1801. MURRAY and HIGHLEY, &c.

THE former edition of this treatife, publifhed under the title of *Cafes of Infanity,* is too well known to medical readers interefted in the fubject to render a particular notice of the prefent neceffary. It is a work purely practical, confifting of individual cafes, without any connecting principle, or general theoretical difcuffion: it does not, therefore, admit of abridgment. The means employed in the cure, and which appear often to have been fuccefsful, are not characterifed by any novelty of prefcription, but are fuch as ordinarily fuggeft themfelves in fimilar cafes. The author might have fpared his pains in quoting wonders from foreign writers on the fubject. Thus the cafe recited from *Sorry,* of a child having been born raving mad, 'and who, when four days old, poffeffed fo much ftrength in his legs and arms, that four women could with difficulty reftrain him,' &c. &c. might have been omitted without injury to the work.

ART.

Art. XXIII. *Exercices de Botanique, a l'Usage des Commencans: Botanical Exercises for the Use of Beginners; an elementary Work, adorned with* 157 *Copper-plates. By* J. C. Philibert. 2 vols. Royal 8vo. 434 pages, price *2l. 2s.* Paris, 1801. Imported by Boosey, London.

THE plates which accompany the present work, the author observes, were executed by a society of *amateurs* in science, and were intended to be followed by others relative to the two other kingdoms of Nature. Particular circumstances, however, prevented the completion of the plan, and limited it to the present collection, under the title and in the form of *Botanical Exercises*. M. *Philibert* was charged with the composition of the text adapted to the explanation of the plates; and he has followed the order of these in his arrangement of the subject, which is that of *Tournefort*. In order, however, not to confine himself exclusively to a method which, though deservedly admired, is not altogether accommodated to the present state of the science, the author has judged it right to adapt the same examples, first to the *sexual system* of *Linnéus*, and afterwards to the *natural method* of *Jussieu*. His aim is to familiarize the student with the books, without which it is impossible to study botany with advantage; but which, nevertheless, require the aid of a familiar book of instructions, such an one, in fact, as the work before us; which is undoubtedly well calculated to facilitate the acquisition of botanical knowledge, by smoothing the access to it, and by furnishing a familiar introduction to its elements.

In a clear and well-written preliminary discourse, the author points out the necessity of recurring to proper treatises on the subject, and at the same time indicates those which he deems necessary, and indeed indispensable, for the purpose. These are, 1st. the *Elemens*

mens de Botanique of *Tournefort*, or, which is more complete, the 2d edition of the ſame work, publiſhed in 3 vols. 4to in 1700, under the title of *Inſtitutiones Rei Herbariæ*: 2d. the *Syſtema Vegetabilium* of *Linnéus*, which contains only the eſſential characters of the genera and ſpecies: in addition, therefore, to this will be required, the *Genera Plantarum*, and *Species Plantarum*, of the ſame author. The former contains what the author calls the *natural characters* of all the genera, and the deſcription of all the parts of the flower and the fruit. The *Species Plantarum* contains the diſtinguiſhing characters of the ſpecies, and likewiſe the different names and phraſes under which the moſt celebrated writers have treated of them; thoſe of the known *varieties* of each ſpecies, and the place where they grow naturally: 3d. the *Genera Plantarum* of *Juſſieu*. To theſe ſhould be added a *Dictionary of Terms*, on the plan of that of *Rouſſeau*, which, however, is incomplete. An uſeful work of this ſort has juſt appeared by the author of the preſent treatiſe, and which is rendered the more valuable by the addition of numerous figures.

An explanation of the three principal methods of claſſification, viz. thoſe of *Tournefort*, *Linnéus*, and *Juſſieu*, follows; the author here points out the advantages peculiar to each, and which ſerve to render it, in ſome reſpects, preferable to the others. On the whole we may obſerve, that it will not be eaſy to find a work better calculated for teaching the *principles of botany*, and for enabling the ſtudent to reduce thoſe principles to practice, than the preſent. The plates are extremely well executed, and convey a very perfect idea of the port and phyſiognomy of the plants they are intended to repreſent. The type and paper are likewiſe of the beſt kind.

In the text accompanying the plates, each plant is deſcribed according to the three methods mentioned above, and referred to its proper ſtation in each of thoſe ſyſtems. A conciſe account is then given of its

its place of growth, its habits, its ſenſible, œconomical, and medicinal properties, when theſe are known; and, laſtly, its mode of growth and propagation.

ART. XXIV. *Medecine du Voyageur, &c. Medicine for Travellers; or, Advice on the Means of preſerving Health, and remedying the Accidents and Diſeaſes to which Perſons are expoſed in travelling by Land or Sea. Followed by a Practical Eſſay on Travelling and Sea Voyages conſidered as Remedies. By* J. D. DUPLANIL, *M. D.* 3 vols. 8vo. about 1200 pages. Paris, 1801. Imported by BOOSEY, London. Price 18s.

IN ſtyle and general arrangement this work reſembles the *Domeſtic Medicine* of Dr. *Buchan*, like which it is addreſſed to the general reader, and contains a variety of inſtructions that may be uſeful to perſons undertaking long voyages, by ſea or land, and to whom profeſſional aſſiſtance is not always acceſſible.

ART. XXV. *The firſt Number of Veterinary Tranſactions; containing Obſervations on the Effects and Treatment of Wounds of Joints and other circumſcribed Cavities. Publiſhed by Order of the General Meeting of Subſcribers to the Veterinary College.* 8vo. 90 pages, with 2 plates, price 3s. 6d. London, 1801. DEBRETT.

WE congratulate the public on this firſt fruit of that excellent eſtabliſhment the *Veterinary College.* It was high time to wreſt from the hands of ignorance and brutality the care and manage-

ment, in its diſeaſes at leaſt, of one of the moſt uſeful of domeſtic animals. Humanity and intereſt called alike for the reform which has been begun. And though there is reaſon to lament the oppoſition which ignorance and prejudice appear too ſuccefsfully, as we learn from the preface to the work, to have manifeſted, the world is too enlightened, we truſt, to ſuffer them ultimately to triumph. The utility of principles, in this as in every other branch of art, will appear in the obſervations here given. Experience has undoubtedly its value; but experience, unaided by rational principles, is at beſt a blind guide, and, in matters relating to ſo obſcure and difficult a ſubject as the animal œconomy, continually liable to conduct us, by falſe analogies, to error. But it is not in its application to the brute alone, that the full importance of veterinary ſcience can be perceived. If the functions of the human œconomy have frequently been illuſtrated and explained by comparative anatomy, and reference to the ſame functions in the animal, there is as much reaſon to ſuppoſe that pathology may receive improvement from the ſtudy of diſeaſe in the brute creation. Experiments can here be inſtituted which in the human are totally inadmiſſible.

The obſervations here given relate to wounds of circumſcribed cavities. Under this term are included the cheſt, the abdomen, the joints, the mucous capſules, or *burſæ* mucoſæ, and even the blood veſſels, &c. Several caſes are related of inflammation of the internal coat of veins in conſequence of bleeding; an accident, it ſeems, that not unfrequently follows this operation in the horſe. In theſe caſes, as well as in penetrating wounds into joints and mucous capſules, the chief reliance in the treatment is placed on the actual cautery applied to the lips of the wound. The object of this is to produce a glutinous ſubſtance to cloſe up the opening, and, before the ſlough is removed, for granulations below to ſupply the place of the

the lymph, and thus produce union of the divided parts. The succefs of this mode of practice is apparent in the cafes recited. In collections of fluid in the mucous capfules furrounding joints, and in the fheaths of tendons, as in the fwellings termed *wind-galls* and the like, a caution is given againft opening them by incifion or otherwife, as is frequently practifed. Inflammation often follows the operation, and adhefion of the tendons to the fides of the fac, or to each other; which ever after prevent a free motion of the limb.

A confiderable part of the prefent volume is occupied by an account of the eftablifhment, and of the interefted oppofition it has encountered, not only from farriers and fmiths of the old fchool, but from grooms and fervants, who have found their perquifites from the former annihilated.

ART. XXVI. *Traite des Moyens de defìnfecter l'Air, &c. A Treatife on the Means of purifying the Air, of preventing Contagion, and arrefting its Progrefs. By* L. B. GUYTON-MORVEAU, *Member of the National Inftitute, &c. &c.* 8vo. 306 pages, price 6s. Paris, 1801. Imported by BOOSEY, London.

IT would be a wafte of words to point out the importance of the fubject here difcuffed: and the treatment of it by fo diftinguifhed a chemift as M. *Morveau* cannot fail to give it additional intereft. The enabling us to deftroy with facility and certainty the moft noxious impurities of the air we breathe, and to eradicate, perhaps, the feeds of peftilence and contagion, is one of the obligations we owe to modern chemiftry; for the aromatic fumigations, and other inert proceffes, practifed in the earlier ages, and ftill too much relied on, have no claim to rank

with

with thofe above alluded to. They ftifled, as it is very properly obferved, rather than deftroyed, the contagious effluvia; and thus, by mafking the danger, added to its degree.

In a preliminary difcourfe, the author points out the infufficiency of the ordinary methods in ufe for the deftruction of contagion, and the prevention of its fpreading. Due merit, however, is allowed to the proceffes recommended by our countrymen Dr. *Carmichael Smyth* and Mr. *Cruickfhank*, although, for fufficient reafons, he has not thought them the beft poffible for the purpofe. It is furprizing that fo little attention fhould have been paid to the fubject of mineral acids in a ftate of vapour, as deftroyers of contagion; for their efficacy for this purpofe was long ago eftablifhed by the author of the treatife before us. More than five and twenty years ago M. *Morveau* publifhed an account of a procefs for purifying air charged with putrid and contagious emanations, founded on authentic and decifive experiments. The burying-vaults of the principal church at *Dijon* being full during the winter of 1773, and the intenfity of the froft at that period preventing the opening of the ground in the ordinary burying-places, the vaults were ordered to be emptied. It was imagined that fufficient precaution had been taken, in throwing on quicklime, though not even a vent was provided for the vapours that were extricated; and not confidering, what the experiments of *Macbride* had before proved, that although lime prevents the putrefaction of animal fubftances, it at the fame time promotes the difengagement of its products. The infection * of the air foon became fo infupportable, that the church was obliged to be fhut up. Unfuccefsful attempts were next made to purify the air by

* The word *infection* is not ufed here in the fenfe in which it is commonly employed with us, viz as analogous nearly with contagion; but as fimply expreffing an impure or contaminated ftate of the air by putrid effluvia.

detonation

detonation with nitre; by fumigations of vinegar; by burning a variety of perfumes and odoriferous drugs, &c.; by sprinkling the pavement with a large quantity of the *anti-pestilential vinegar*, or the *vinaigre des quatre voleurs*. The odour of the putrid effluvia was merely masked for a moment by these operations, and soon re-appeared with equal intensity; spreading to the neighbourhood, where the symptoms of a contagious fever began to manifest themselves.

At this period the author was consulted; and his first attention was directed to the *muriatic acid*, the very diffusible vapours of which might seize the ammoniac, which he considered as the vehicle of the odorous miasmata. This theory rested on two constant facts; the first, that every putrid decomposition produces a great quantity of ammoniac: the second, that the muriatic acid and ammoniac, when they meet in a state of vapour, almost instantaneously unite to form a neutral salt. It was determined, therefore, to try the fumigation with muriatic acid, as a means of purifying the air. For this purpose, six pounds of common salt, and two pounds of concentrated sulphuric acid were employed. These were mixed together in a large glass vessel placed on a bath of cold ashes, which were gradually heated by means of a large chafing-dish. On the following day there was not the least vestige of offensive odour remaining in the place, and all alarm from that time ceased. Notwithstanding this, and several other instances which occurred about that period, where the fumigation thus practised was attended with the greatest success, the practice seems to have fallen into disuse, and to have been almost wholly forgotten, till the revival of it on board the *Union* hospital ship in the year 1795, under the direction of Dr. *Carmichael Smyth* *. It is true, he employed the *nitric acid vapour* for the purpose; but its use appears evidently to have been

* For an account of this, see Med. and Chir. Rev. Vol. III. p. 11.

 suggested

ſuggeſted by the experiments of M. *Morveau* above deſcribed. The method adopted more lately by Mr. *Cruickſhank*, of *Woolwich* *, is next mentioned, with due praiſe: ſome alteration, however, in the proportion of ingredients employed is adviſed.

Having noticed the different methods hitherto employed for purifying the air by fumigations with the mineral acids, the author preſents us with ſome reflections on the ſubject, and on the opinions ordinarily held with regard to it. Conceiving it ſufficiently proved by experiment, that the mineral acids have the power of deſtroying contagious miaſmata, as well as the putrid odour which denotes their preſence, he inquires whether theſe acids all act in a ſimilar manner; if they exert the ſame affinities; if their effects are equally prompt and certain; if their action be increaſed by oxygen; if it is true that this principle is ſet at liberty in the proceſs recommended by Dr. *Smyth*, as ſuppoſed by Mr. *Keir*; whether all kinds of contagious miaſmata are equally ſubject to the influence of theſe agents, and likewiſe whether all putrid effluvia have neceſſarily this character; if ammoniac makes a neceſſary part of theſe compounds; whether they are always accompanied by carbonic acid gas; and, laſtly, whether the vegetable acids are capable of effecting their decompoſition. Such are the points which the author here undertakes to diſcuſs, and to determine by chemical experiment.

With this view, ſome pieces of raw beef were incloſed under a large glaſs bell filled with atmoſpheric air, and inverted over water, and left to putrefy in this ſtate. When the putrefaction was complete, the air contained in the glaſs was expoſed to different trials; and the following is the reſult in general terms.

When the air was waſhed with *lime-water*, a copious precipitation took place, marking the preſence of car-

* For an account of this, ſee Med. and Chir. Rev. Vol. VII. p. 540.

bonic

bonic acid gas. The air preserved, neverthelefs, its putrid fmell.

Another portion of the putrid air was agitated with a folution of *nitrate of filver*, which became inftantly blackened, and a brownifh pellicle formed on the furface, part of which funk to the bottom of the veffel. Nearly the fame phenomena took place with the *nitrates of mercury*, and *copper*, and with the *acetite of lead*.

The putrid gas being introduced into a bottle with a folution of *fulphure of lime*, the latter foon grew turbid, and carbonate of lime was depofited, but without any appearance of a black or brown precipitate, or the difengagement of ammoniac. Nor did flips of paper, tinctured with different vegetable colours, or with nitrate of copper, undergo any change on expofure to putrid gas, which indicated in any degree the prefence of ammoniac, or other alkali in a free ftate. When, however, quick-lime was added to the water which had been in contact with the putrid gas, and which had abforbed fufficient of this to give it an offenfive odour, a vapour was difengaged from the water which fenfibly evinced the prefence of ammoniac.

When the air was agitated with a folution of *fulphate of zinc*, there was no trace of the white precipitate which fulphurated hydrogen, and the hydro-fulphures, occafion in that liquor: nor was the putrid odour diminifhed in any remarkable degree. The oxyds which are known to act moft powerfully on the hydro-fulphures, fuch as the oxyd of zinc, the black oxyd of manganefe, and the brown oxyd of lead, all reduced to fine powder, and flightly moiftened with diftilled water, were fhut up in contact with the putrid gas: but after four and twenty hours of expofure in this way, no change in the colour of thofe oxyds was perceptible, no trace of the difengagement of ammoniac, nor any phenomenon indicating the prefence of fulphur. The fetid odour

merely appeared to be somewhat diminished in the vessel containing the oxyd of manganese, and the water acquired the property of precipitating, of a dirty gray colour, the solutions of nitrate of mercury and of the acetite of lead *.

In the putrid air was next burnt a considerable quantity of gum benzoin: but the effect was merely to cover, in some degree, its offensive odour, without at all destroying it. The effect was the same when the air was agitated with spirituous solutions of different aromatic gums and balsams. When the *thieves' vinegar* was employed in the same way, the putrid odour was modified merely, but not destroyed. The *pyro-ligneous acid* seemed to have rather more effect, as, after two hours, a slight degree only of offensive smell was perceivable, combined with the empyreumatic odour of the acid.

When *gunpowder* was repeatedly exploded in the gas, the offensive odour disappeared; but it seemed rather to be owing to the dispersion of the gas than to its correction. The gases produced, indeed, during the explosion of gunpowder, being merely carbonic acid and azotic gas, with a very inconsiderable proportion of sulphureous gas, could not be expected to act chemically on the putrid vapour.

* On the reading of the experiments above mentioned at the *Institute*, M. *Berthollet* made a number of interesting observations, the result of his former inquiries on this subject. He remarked, 1st. That the gas generated by putrefaction contains much carbon, but no hydrogen. 2d. Urine exposed to light in close vessels remains acid; but in the dark, forms ammoniac. 3d. Flesh kept for fifteen years in close vessels, with a small quantity of water, rendered the water acid, with a small quantity of ammoniac. 4th. This flesh after being so kept, still produced jelly by boiling. 5th. The gas twice gave him a fit of the colic; experiments of this kind, therefore, require caution. 6th. The putrid principle in the air is not absorbed by lime-water, unless it be previously dissolved in water. 7th. A substance not putrid may absorb much of this gas without itself putrefying; but when the absorption arrives at a certain point, the body is much disposed to putrefaction. 8th. Water is formed in the greater number of putrefactions; but there is no developement of hydrogen. 9th. The most antiseptic substances are the cinchona, and gall-nuts.

Good vinegar caused the putrid odour to disappear; as did the vapour of distilled vinegar. When the *acetic acid*, or *radical vinegar*, was substituted for the two former, the effect was much more striking, the fetid odour disappearing instantly, without the agreeable pungency of the acid being sensibly diminished.

The mineral acids were next examined, as to their power of destroying the contamination of putrid air. The vapour of sulphureous acid, and the same in a state of gas, let loose during the combustion of sulphur, were very effectual for the purpose. The sulphuric acid, both concentrated and diluted with three times its bulk of water, completely destroyed the putrid smell, when agitated with the air. When the nitric acid vapour was employed, in the manner recommended by Dr. *Smyth*, no trace of putridity remained, nor did the air occasion any alteration of colour in the solutions of acetite of lead or of nitrate of mercury.

Whatever care was taken in the execution of the last experiment, the author always observed some slight traces of red vapours of nitrous gas during the process: he proceeded, therefore, to ascertain, by direct experiment, whether the opinion of Mr. *Keir* were well founded, that oxygen gas is given out during the process, and thus the air meliorated by it. Probability, certainly, was against such a supposition; for it would be surprising, if a distillation, the essential and rigorous condition of which is, that not a particle of acid is decomposed, should furnish a sensible quantity of oxygen. But the author still less expected to find, that, in opposition to Mr. *Keir*'s assertion, instead of being meliorated by the process, the air was rendered worse by many degrees than before. This, however, was the fact.

The powerful action of the *muriatic acid gas* has been already mentioned. On repeating the experiments of Mr. *Cruickshank* with the oxygenated muriatic

riatic acid gas, the author's results fully confirmed those of that gentleman. The advantages of this process, especially when simplified in the way here advised, are clearly demonstrated. Into a bottle, whose capacity was three centilitres (about $\frac{1}{4}$ oz.) were put four grammes (about ʒi$\frac{1}{2}$) of black oxyd of manganese, grossly powdered; the bottle was then filled about two-thirds full, with the nitro-muriatic acid *(aqua regia)*. In a few minutes, on being agitated, the oxygenated muriatic acid gas was disengaged with such intensity, that vegetable colours presented to the mouth of the bottle were soon radically destroyed. The facility, and particularly the promptitude, with which, without the aid of a distilling apparatus, this powerful re-agent is thus obtained, induced the author to give it the name of *extemporaneous oxy-muriatic acid;* and he afterwards discovered another property of this preparation, which may render it still more generally useful. It is well known how difficult it is, even in the closest vessels, to preserve unchanged the oxygenated muriatic acid, as procured by the common processes. A bottle prepared in the manner here indicated, after being laid aside and forgotten for eight years, was found to have retained its pristine pungency.

Having thus examined the power of the various substances employed for the destruction of contagion, the author gives a general view of the conclusions deducible from his experiments with respect to the comparative efficacy of the different means; and points out the best method of employing those which are most deserving of confidence.

Water, cold or warm, employed in washing, may carry away infectious matter, but without decomposing it: and it has been found that lye itself has not always destroyed the contagion in linen; but that this

this has afterwards communicated the infection, in the case of plague *.

Lime is only really useful for decomposing animal matters before putrefaction begins, or for the absorption of carbonic acid; for putrid air is not sweetened by passing through lime water.

Resinous substances, even those which give out a volatile acid on distillation, merely disguise the putrid miasmata, without at all destroying them, or changing their infectious nature.

Fire occasions currents of air, which may carry off and disperse putrid vapours, when confined in a narrow space; but beyond this, it is rather hurtful than salutary. It can only decompose the putrid effluvia when carried to the degree of actual combustion.

No advantage can be expected from burning different substances on live coals. Vinegar thus employed is rather burnt than evaporated. Nitre itself gives out only irrespirable gases, after having served by its oxygen to augment the intensity of the fire. It is the same with *gunpowder*, which merely exerts a mechanical action on the air.

With *sulphur* it is otherwise, its combustion being never complete, and producing only the first stage of oxydation; whether lighted, or thrown on live coals, it emits a sulphureous acid vapour, which acts powerfully on the miasmata which it reaches; it, however, exerts its operation at no great distance, and is inadmissible in places that are inhabited. It may, nevertheless, be usefully employed for the purification of goods and merchandize that are not readily spoiled; and of the air of narrow passages, as in hospitals.

Common Vinegar, or the *acetous acid*, may be reckoned amongst the best purifiers for substances that admit of being immersed in it, or which are capable of being well washed with it; but it is not suffi-

* *Papon*, Traité de la Peste, tom. 2. p. 86.

ciently

ciently volatile to be employed with advantage in fumigation.

The *pyro-ligneous acid* has an action very analogous to that of vinegar, but less powerful.

With respect to the *acetic acid*, or radical vinegar, frequent fumigations with this could not be made in places at all spacious, without incurring a very heavy expence. Its action on infected matters is, however, more rapid and intense than that of common vinegar. Its quick and penetrating scent, which it emits at all temperatures, serves, in the author's opinion, not only to change the condition of the surrounding air, but affords at the same time a powerful stimulus to the organs of respiration, which supports the vital powers to a degree of energy capable of resisting the impression of contagion. The acetic acid, therefore, may be carried about the person in times of contagion, and when exposure to it is unavoidable, with great advantage.

The *mineral acids*, in general, are anti-septic, and check all fermentation, both animal and vegetable, and are capable of decomposing contagious virus; they are not all, however, equally advantageous.

The *sulphuric acid* cannot, on account of its fixity, serve to purify the air.

The *sulphureous*, in a liquid state, produces but little effect: its action, in the state of vapour, as arising during the combustion of sulphur, has been already mentioned.

The *nitrous acid* acts only on the respirable portion of the atmosphere, and the vapours which it exhales are highly suffocating.

The *nitric acid*, disengaged in Dr. *Smyth*'s process, destroys with great certainty putrid miasmata; but it diffuses itself to no great distance, is readily condensed, and only acts as an oxygenant in giving out *nitrous* gas: a repetition of the process, likewise, is requisite, even in a small apartment. The process, besides,

besides, is expensive, and requires many cautions in its performance.

The *muriatic acid* offers here the greatest advantages, on account of its prodigious expansibility. The manner of employing it is as simple as it is cheap, and the process is performed with less risk of accidents from fire, than that of Dr. *Smyth*; since no greater heat is required than what is produced by the mixture of the ingredients.

By the addition of a little of the oxyd of manganese, the oxygenated muriatic acid gas is procured, which is the most certain preservative, and which is recommended by the facility with which it may be applied in all cases.

In the list of substances susceptible of a quick evaporation, and which is capable of producing all the salutary effects of the most powerful super-oxygenants, may be mentioned the *oxygenated muriate of tin (liquor fumans Libavii)*. The use of this was first suggested by M. *Vicq-d'Azyr*. This is so extremely volatile, that the vessel containing it cannot be opened for an instant without the disengagement of the most pungent vapours: it is necessary, therefore, to preserve it in vessels very closely stopt. It is, however, liable to the inconvenience of causing the stopper often to adhere so tightly, as to be with difficulty withdrawn.

With respect to the muriatic acid fumigation, the following is recommended as the most simple method of performing the process. In cases where it is requisite to purify the air of places that are not inhabited, a chafing dish is to be placed in the center, and on it an iron pot half-filled with sand or ashes. On this is to be placed a large glass vessel, or one of porcelain or stone-ware, containing muriate of soda (common salt). When this begins to be heated, sulphuric acid (oil of vitriol) is to be added, when the person officiating is to retire, keeping the doors and windows as closely shut as possible for six or eight hours.

hours. A ward or apartment containing twenty beds would require the following quantities of ingredients to anſwer the intended purpoſe: common ſalt, nine or ten ounces; oil of vitriol, about eight ounces.

In the purification of inhabited places, different precautions are required; very ſmall quantities only of the ingredients are to be employed at once; or, which is better, the ſalt ſhould be carried round the apartment, and the acid added by degrees only: by this means, the extrication of the acid vapour takes place at any point, and in any degree, that may be judged neceſſary. The only apparatus requiſite for the purpoſe are, a bottle of ſulphuric acid (oil of vitriol), a large glaſs goblet, and ſome common ſalt. The goblet being placed on the ground or on a table, in the middle of the room, a large ſpoonful of common ſalt is to be put in the glaſs, and a very ſmall *liqueur* glaſsful of the ſulphuric acid is to be added, but at two or three different times, and at intervals. At each affuſion of the acid a quantity of vapours is diſengaged and diffuſed around the apartment, without occaſioning any inconvenience to the aſſiſtants.

The fumigation with the *oxygenated muriatic acid* differs only from that above deſcribed, in the addition of a little of the black oxyd of manganeſe (commonly called *manganeſe* ſimply). The proportions of the ingredients, however, ſhould not be exactly thoſe of Mr. *Cruickſhank*, but the following, in order to effect a complete ſaturation of principles, and to avoid waſte.

Common ſalt	10 decagrammes—about	3 oz.	2 dr.	10grs.
Manganeſe	2	0	5	17
Water	4	1	2	33
Oil of vitriol	6	1	7	50

The ſalt and manganeſe in powder are to be firſt mixed together, and the mixture put into a glaſs, or ſtone-ware veſſel, and the water added. laſtly, the oil of vitriol, at once, or at different times, ac-

cording

cording as the difengagement of vapour is required to be quick or gradual.

From the account that has now been given, the value of the treatife before us will be fufficiently apparent. M. *Morveau* has fucceeded in rendering the deftruction of the contamination arifing from putrefaction moft fimple and certain. That contagious miafmata are always equally within our power, is not, from the nature of the fubject, as readily demonftrable: that uncertainty which attaches itfelf, unfortunately, to every thing medical, applies here. But although it cannot be proved that contagious miafmata are one and the fame with the particles iffuing from putrefying fubftances, and which are fufficiently obvious to the fenfe of fmell, there is great reafon to fuppofe them intimately connected, and capable of being deftroyed by fimilar agents. If putrefaction, it has been properly obferved, is not the *caufe* of contagion, there can be no doubt that it is a frequent *vehicle* of it; and there are very fatisfactory proofs of the latter having on different occafions been effectually deftroyed, by means adapted to the deftruction of the former. Indeed, whatever be the nature of contagious particles, it is difficult to conceive them fo compounded, as to refift the all-powerful chemical influence of the oxy-muriatic acid gas, or even the muriatic acid gas in its fimple ftate.

Art. XXVII. *Engravings of the Arteries, illuftrating the Second Volume of the Anatomy of the Human Body, by* J. Bell; *and ferving as an Introduction to the Surgery of the Arteries. By* Charles Bell, *Surgeon.* 4to. 49 pages, price 1*l.* 1*s.* London, 1801. Longman and Rees.

THE principal arteries of the body are here delineated with much neatnefs and accuracy. As in Mr. Bell's *Syftem of Diffections*, fo here particular attention

attention is beſtowed on thoſe parts which are the uſual ſubject of operations, or which are much expoſed to accidental injury.

ART. XXVIII. *Deſcriptio Arteriarum Corporis Humani in Tabulas redacta, quam antea Diſſertation un Forma exhibuit, jam vero emendatam ſiſtit* ADOLPHUS MURRAY, *M. D. Anat. et Chirur. Profeſſor Upſal.* 4to. 120 pages, price 3s. 6d.

ART. XXIX. *A Deſcription of the Arteries of the Human Body, reduced into the Form of Tables. By* ADOLPHUS MURRAY, *M. D. Profeſſor of Anatomy and Surgery at Upſal. Tranſlated from the Latin under the Inſpection of* JAMES MACARTNEY, *Lecturer on Comparative Anatomy and Phyſiology at St. Bartholomew's Hoſpital.* 8vo. 106 pages, price 3s. 6d. London, 1801. DEBRETT.

THE work of Profeſſor *Murray*, of which the above is a tranſlation, contains a minute and accurate delineation of the arterial ſyſtem and its ramifications, illuſtrated by the requiſite verbal deſcriptions. It will prove an uſeful guide to ſtudents in this important branch of their profeſſion.

MISCEL-

MISCELLANEOUS INFORMATION.

§ 39. *Observations on Goitres. From Voyage Pittoresque et Physico-Œconomique dans le Jura. Par* J. M. Leguinio. Paris, 1801. 2 tom.

THE department of *Jura*, according to the division of modern France, includes a large track of mountainous country that separates France from the Swiss Cantons. Like the Alps, its inhabitants are very subject to that swelling of the throat termed *Goitres* by the French, and *Bronchocele* in the Ordinary Medical Nomenclature. In the situations where this affection particularly prevails, neither state, education, nor care, is capable of preserving the person from its attack. Almost all the women are, more or less, affected by it; and, frequently, men experience the same deformity: even dogs, the author observes, are sometimes seized with it. Vulgarly, the disease is attributed to a peculiar quality in the water: but, were this the case, it would be no difficult task to prevent it by proper correctives of the water; and the rich, at least, might be expected to escape it. The causes, probably, are not sufficiently known, since no class is exempt from it. It is generally believed that the Goitre is especially endemial in the mountains. This, however, the author remarks, is not the case in *Jura;* it is only observed there on the confines of the low country, where the vineyards are situated. In the most elevated regions he has not met with it, although the waters (the women do not drink wine) apppear to be of the same nature as in the cities below. The cities where the disease is particularly met with are *Lons-le-Saulnier*, *Salins*, and *St. Claude.* In these situations, too, gibbosities and tumours of different kinds frequently occur, and probably depend on one common cause with the Goitre. The general health and vigour of the inhabitants of the district do not appear at all inferior to those of countries where no such deformity prevails. They are not that small diminutive race of people, with bright eyes and black hair, that are found in lower Britany; nor the tall, fair, light-haired race of Normandy; nor have they the athletic form of Flanders: but they are a race equally distinct, and, for the most part, strong and well made. The women are not proportionably large, tall, and fair, as the Flemish women: *Jura* is not the Georgia of France. Fine women, however, are sometimes met with; but their beauty is not always respected by the endemic disease.

---

§ 40. *On the Habits and Customs of the modern Greeks inhabiting the Islands in the Archipelago. From Voyage en Grece et en Turquie, par* Sonnini. Paris, 1801.

In the delightful climate of Greece, the human body acquires its perfect state at an earlier period than in the colder regions of the north: the different orgáns, and the various faculties, develope themselves less tardily

tardily. It is no rare thing to see in the isles of the Archipelago girls marriageable at ten years old; and at the age of fifteen or sixteen they have attained their most perfect physical state. We know that the periodical evacuation, peculiar to the female sex, is small in quantity in proportion to the heat and moisture of the climate. It is less abundant in the East than in Europe; still less in Egypt and Barbary; trifling and inconsiderable in the interior of Africa; and scarcely observable in the equatorial regions of America. Philosophers have endeavoured to calculate the quantity of this evacuation; but the temperature of the oriental isles in the Mediterranean must have undergone some change, or the physical constitution of the women be greatly altered since the time of Hippocrates, if we are to credit his observations on this subject. Hippocrates states the quantity of fluid evacuated at each menstrual period by his countrywomen of the isle of Cos, as amounting to nine heminæ, a measure of about nine ounces. This, however, M. *Sonnini* observes, is far greater than is at present the case with the Grecian women, in the greater part of whom the quantity of menstrual fluid does not exceed three ounces, and in many it is still less than this.

The author gives a curious account of the ceremonies observed in the Grecian isles, during the process of childbirth, to which he himself, it seems, was an eye-witness. "The young woman," M. *Sonnini* observes, "at whose *accouchement* I assisted, was about eighteen years of age, large, well made, and robust, with a degree of beauty that the Grecian ladies of antiquity might have envied. The precursors of *labour* manifested themselves at supper-time, and the young woman was conducted to her chamber, where I had permission to follow. The midwife, who was very old, and of great reputed skill and experience, soon arrived, accompanied by an assistant nearly as old as herself, but whose physiognomy was less remarkable and characteristic. A painter about to represent a sybil could not have chosen a better model: every thing about her announced the exterior of a magician, and her answers to the questions I put to her, by their obscurity, might well have passed for oracles. She brought with her, also, a sort of tripod or three-legged stool, the use of which I was afterwards to become acquainted with. The first care of the old lady was to open all the locks of the doors, closets, boxes, &c.; in short, every thing that was shut by a key in the house. This precaution of keeping every thing open, founded on a ridiculous analogy, is observed with the utmost rigour, if they wish to avoid difficulty in childbirth; and, as a consequence of the same ridiculous prejudice, married women only are allowed to be present, girls being absolutely excluded. They informed me, also, that if I wished to be present, I must make up my mind to remain in the room till the *labour* was entirely completed, a custom strictly observed. From the instant that *labour* commences, those that are in the apartment must not go out, nor any one from without come in, till all is over. The former incur even a sort of impurity that deprives them of all communication with others till such time as a priest has, by his blessing, freed them from the contamination they are supposed to have contracted by

by being preſent. In the mean time, nature began to act; the efforts ſhe excites to haſten the birth of the new being were multiplied and accelerated; every thing announced a ſpeedy and eaſy delivery. During this time the mother was not ſuffered to be idle, but was compelled to walk about the room inceſſantly; and if the violence of the pain, a degree of faintneſs, or her apprehenſions, made her deſirous of repoſing for an inſtant, the two old women ſupported her under the arms, and obliged her to walk. When the pains came on, they made her ſtoop forwards over the bed, whilſt the midwife, placing herſelf behind, preſſed ſtrongly the ſides of the abdomen with both her hands, till the pain went off, when the walking about again began. At length the critical moment arrived. The young woman was placed on the fatal tripod or ſtool, mentioned above, the midwife ſeating herſelf before her on a lower ſeat, whilſt her aſſiſtant ſat behind on one more elevated, claſping her arms around the patient's body. As ſoon as the child was born, and ſeparated from the after-burden, the aſſiſtant, exerting all her ſtrength, lifted up the patient ſeveral times perpendicularly from the ſtool, letting her fall again with great rudeneſs, till the delivery of the *after-birth* was finally accompliſhed. This violent proceeding is in general uſe among the Greek women, who ſuppoſe it indiſpenſable to the completion of the *labour;* and it does not appear to occaſion any ill effects. The patient herſelf did not complain of it, but walked afterwards with eaſe to the bed, without appearing much fatigued or weakened by the exertion. Immediately after the delivery, a bandage was applied with much tightneſs around the body, which tends to preſerve the ſhape afterwards. The firſt day the midwife foments the patient with dried roſe leaves, boiled with wine and honey, applying the leaves themſelves as a cataplaſm. The ſecond and following days they content themſelves with a fomentation of warm wine, applying afterwards the powder of cinnamon, cloves, nutmegs, or cummin-ſeed. Inſtead of wine, brandy is employed for the inferior claſſes; but it excites conſiderable ſmarting and uneaſineſs. This practice is continued in all caſes for eight days, night and morning; and it is curious to obſerve, that at each dreſſing the midwife, placing herſelf on the bed, and facing the patient, extends her legs between thoſe of the latter, takes hold of both her hands, and, with one foot applied exactly to the parts affected, gives her three violent ſhakes, preſſing rudely with her foot at the ſame time. The eighth day, at night, they boil an egg hard, and, having deprived it of the ſhell, ſprinkle it over with ſome one of the aromatic powders mentioned above, and apply it to the parts, with a bandage, for two or three hours. The object of this is, the midwife gravely obſerved, to draw off the colds which the patient might have taken during her confinement. This finiſhes the affair of lying-in, and the midwife takes her leave.

" The linen employed on the occaſion muſt by no means be waſhed in ſea water, although nothing elſe is uſed for the common purpoſes of waſhing: they are perſuaded, that if this rule was not obſerved, the woman would infallibly die. Nor muſt ſhe be ſeen by any ſtar; and if ſhe goes abroad, as is not uncommonly the caſe, four or five days

after delivery, ſhe takes care to return at ſun-ſet, and by no means to open any door or window of her apartment, leſt any ſtar ſhould ſurprize her, and occaſion the death of both mother and child. The firſt time that a woman quits her bed after lying-in, ſhe ought, before putting her feet to the ground, to ſtand on a piece of iron, that ſhe may become, as they ſay, ſtrong and robuſt as the metal. Nor muſt ſhe enter any houſe without throwing on the threſhold a key, or other piece of iron, and treading on it, if ſhe would avoid introducing along with her the deadly influence ſhe is imagined to be environed with.

"The profeſſion of *accoucheur* is abſolutely unknown among them; and it appears, indeed, that difficult parturition very rarely occurs. If any ſuch preſents itſelf, the midwife has recourſe to certain ſuperſtitious practices, and here terminates the extent of her ſcience. During the time that I paſſed in the chamber of the young woman in labour, I put a number of queſtions to the old midwife reſpecting her practice. I inquired, for example, what ſhe did where the child preſented wrong. She aſſured me that ſuch a thing ſcarcely ever happened; but if it did, ſhe endeavoured to reſtore the child to the proper poſition. If ſhe did not ſucceed in her attempt, there remained another reſource, which ſhe aſſured me was infallible: this was, to addreſs herſelf to the huſband, who, in the opinion of the women of this country, poſſeſſes in an eminent degree the power of removing all the obſtacles which oppoſe delivery; and this magical power conſiſts in three blows given with his ſlipper on the back of the wife, pronouncing, in an audible voice, theſe words: "It is I that charged thee with thy burthen: I now free thee from it."

The management of the new born infant is not leſs a mixture of propriety and abſurdity than that of the mother. As ſoon as born, it is waſhed with warm water, and afterwards covered from head to foot with ſalt, which they regard as a certain preſervative againſt worms and diſeaſes of the ſkin. It is then dreſſed and placed in bed, and by its ſide are put a loaf of bread and a wooden peſtle or other wrought piece of timber: the bread, to prevent the child's ſuffering hunger as long as he lives; whilſt the effect of the peſtle is, to make him as quiet as a piece of wood. In other places in the eaſt, the mother takes the child, and the midwife a braſs mortar, which ſhe ſtrikes three times violently, cloſe to the ear of the infant, for the purpoſe, they remark, of opening the organ of hearing, and preventing deafneſs. A variety of other abſurd and ſuperſtitious practices obtain in the management of their children. The method which theſe women take to prevent the crying of their infants is ſingular enough. The mother chews the ſeeds of cummin, and forcibly blows them into the mouth and ears of the child. In order to procure ſleep, they give it nutmeg powder in milk; but the remedy in moſt frequent uſe is *theriaca*, or *Venice treacle.* On the leaſt ſign of pain or uneaſineſs of the child; if it cry, is watchful, or wants appetite; in a word in all its indiſpoſitions, of whatever nature, they have recourſe to *theriaca* as a ſovereign and univerſal remedy. Not a day paſſes without the infant ſwallowing ſome of this drug, or at leaſt having it applied as a plaſter to the navel. The poor, who cannot afford

afford the expence of this remedy, ſubſtitute in its place a paſte of cummin ſeed.

"This exceſſive uſe of heating drugs may have its inconveniencies; but the men are nevertheleſs robuſt, and the women perfectly formed: whilſt with us, where the dictates of experience are frequently ſacrificed to the conceptions of a brilliant theory, the cool regimen almoſt univerſally prevails amongſt the opulent claſſes; with what effect any obſerver may judge.

"In order to avoid the excoriations to which infants are liable, the Greek women waſh the folds of the ſkin with warm wine, in which the dried leaves of myrtle have been infuſed. Theſe lotions are repeated daily, and with the beſt effect; for it is rare to ſee the ſlighteſt excoriation of the ſurface in their children. When any diſorder takes place at the navel, they apply a cataplaſm of ſoot."

In general, the practice of medicine in the Greek iſles is founded merely on experience, and conſiſts in the traditionary uſe of certain receipts. Blood-letting is much in uſe among them; but they delay as long as poſſible to bleed from the arm, as they regard the firſt loſs of blood from this part as capable of obviating the danger of the moſt violent diſeaſes. In general, blood-letting is performed in the foot. In one inſtance, the author requeſted to examine the blood he had drawn a few hours before; but they laughed at his uſeleſs curioſity: it was impoſſible, they obſerved, that it could be bad, as it was virgin blood; that is, was the firſt that had been taken from the arm, and could not, therefore, be otherwiſe than good. A topical application of origanum boiled in wine, to the region of the ſpleen, is one of the hereditary receipts preſerved in the Greek iſlands for the cure of obſtructions, inflammations, and pains of that organ; but its uſe is accompanied with certain myſterious acceſſories, without which they would have no reliance on its efficacy. The application muſt only be made on certain days of the week, and under certain phaſes of the moon: they expoſe the patient to the light of this planet, ſprinkle a few grains of ſalt, pronounce certain words, and apply the cataplaſm. But there is none of their remedies ſo abſurd and ridiculous as that which they uſe in the Archipelago for the cure of inflammation and ſwelling of the *amygdalæ*. This conſiſts in ſtroking gently the throat and neck of the patient with the glans penis of a man. I have ſeen, M. *S.* obſerves, women have recourſe to this remedy with great gravity, and with all poſſible faith in its efficacy. The Greeks treat the bites of ſerpents by deep inciſions on the wound with a razor, and by applications of *theriaca* and ſow-thiſtle *(laiteron)*; making at the ſame time ligatures of extreme tightneſs on the limb above. A curious inſtance is related of the cure of a fever in a fellow traveller of the author by means of arterial compreſſion. M. de T—— was ſeized with a fever of conſiderable violence, which a monk of the convent of St. Denis undertook to cure. He took hold of the arms of the patient one after the other, and, preſſing with his thumb on the artery at the wriſt ſo ſtrongly as to interrupt the circulation, carried on the preſſure ſucceſſively through the whole length of the veſſel, quite up to the ſhoulder. The diſorder, M. *Sonnini* remarks,

marks, ſoon ceaſed entirely. The reader will here, doubtleſs, recollect the effects of arterial compreſſion in removing the paroxyſm of intermittents, as deſcribed by Mr. *Kelly*, in Dr. *Duncan's Annals of Medicine* for 1797*.

That horrible diſeaſe, the leproſy, ſtill infeſts one of the moſt beautiful countries of the eaſt. It was known of old to the Greeks under the denomination of *lepra*, and the Jews were exceedingly ſubject to its attacks. It ſtill prevails amongſt the inhabitants of the iſle of *Candy*: the Turks and Greeks are equally liable to it, and it makes no diſtinction betwixt the rich and poor. The perſons affected with it are compelled to leave the city, and to lodge in huts, where all communication with ſound perſons is interdicted. They live on the product of a ſmall garden attached to their dwellings, on the poultry which they rear, and on the alms of travellers. As ſoon as they perceive any one approach, they advance to beg charity. Their appearance excites the moſt perfect diſguſt; their face and body are deformed by red and ſcaly ſwellings, covered with puſtules; and their hideous aſpect induces the paſſenger to beſtow ſomething in order to be rid of them. Theſe beings are far from being inſenſible to the paſſion of love; on the contrary, the moſt intimate connexion ſubſiſts between them. The acrimony of their humours irritates their paſſions, or rather their brutality, and the effects are exceſſive, and under no controul: ſeparated from the reſt of mankind, they diſdain all ſort of reſerve. They give themſelves up to their brutal enjoyments in the moſt public manner, and continue to repeat their horrible careſſes till their bodies are almoſt deſtroyed by ulceration and putrefaction. The author does not mention any attempts being made for the cure or relief of this diſguſting malady.

The plague, it is well known, is the moſt deſtructive ſcourge of this part of the world. This is not to be wondered at, when it is conſidered that the Turks uſe no precautions to prevent its communication, or to ſtay its progreſs. A peſtilential patient is received into all places with as little reſerve as the moſt healthy; and no one thinks of avoiding him. The author remarks, on the authority of M. *Maſſe*, who had long reſided in that country in the quality of conſul, and whoſe opportunities for obſervation were conſiderable, that a ſingular relation exiſts between the ſmall pox and the plague. According to M. *Maſſe*'s obſervation, the plague never ſhews itſelf at *Stancho*, one of the Greek iſlands (known formerly under the celebrated name of *Cos*, the reſidence of the great Hippocrates), but in the month of January; and he obſerved, that in thoſe years that the contagion became violent, it was conſtantly preceded by a general and deſtructive ſmall-pox. Except with regard to theſe two diſorders, the climate of theſe iſlands appears to be one of the moſt healthy. The plague ſeldom fails to make its appearance every year, but it is not always equally violent and deſtructive. The year 1778 was particularly remarkable for its ravages: in Conſtantinople, in that year, 2000 perſons died of it in a ſingle day; —a ſhocking mortality, and attributable in great meaſure to the ſtupid

* See Med. and Chir. Rev. Vol. V. p. 55.

reſignation

reſignation and indifference of the Turks, which do not ſuffer them to employ any means for their preſervation.

Medicine has not yet, M. *Sonnini* obſerves, diſcovered any certain remedy for the plague; all the receipts found in books are of very little efficacy. It is both difficult and dangerous to make obſervations on a diſeaſe that ſpreads itſelf with ſuch dreadful alacrity. Phyſicians in general have not the courage, or rather the folly, of the Ruſſian ſurgeon, who, when a priſoner along with ſeveral of his countrymen at Conſtantinople, determined to inoculate his fellow priſoners for the plague, in hopes of rendering the contagion leſs deſtructive. He killed by this means two hundred of the priſoners, when, happily for the reſt, the operator, having inoculated himſelf, fell a victim to his own raſhneſs.

The French phyſicians have endeavoured to overturn the aſſertion of M. *Samoilowitz*, a celebrated Ruſſian phyſician, who wrote on the plague in the year 1783, that the infection is incapable of being communicated by the air, but by contact alone. This opinion of M. *Samoilowitz*, the author obſerves, is certainly well founded. Although one lives in a place infected with the plague, the diſeaſe is never caught if all immediate communication with infected perſons be avoided, and all infected matters, and ſuch as are capable of ſerving as conductors, be not touched. In fact, without ſpeaking of the opinion generally received throughout the *Levant* on this ſubject, it is found ſufficient for Europeans eſtabliſhed in Turkey, in order to their preſervation, to ſhut themſelves up in their houſes at the time that it is making the greateſt ravages around them, although they receive their proviſions and neceſſaries daily from without. What proves ſtill further that immediate contact alone can communicate the infection is, that one part of a garment may be ſufficiently impregnated with peſtilential particles to tranſmit the contagion to thoſe that touch it, whilſt the perſon carrying it remains unaffected.

All animal matters, the author obſerves, either in their raw or manufactured ſtate, are vehicles of contagion; cotton, linen, hemp, and goods manufactured from theſe, are equally ſo; even paper has this fatal property. Eatables in general, and metals, appear not to be conductors of contagion. One may receive with ſafety from the hands of a peſtilential perſon a piece of money, or other kind of metal; as alſo vegetables, fiſh, bread, and the like. It is ſaid, however, that very hot bread is capable of commmunicating the diſeaſe, though cold is not ſo The peculiar diſpoſition and temperament of perſons at the time, determine the greater or leſs facility of taking the infection. Many perſons touch peſtilential patients with impunity, without any precaution; and after having braved the danger for ſeveral years, are ſometimes the firſt attacked, and fall victims to the diſeaſe. If there is reaſon to ſuppoſe that, at the moment of a perſon's falling ſick, the plague is the cauſe of his illneſs, they have a method of determining this in the *Levant*, which they deem infallible: it is to adminiſter to the ſuſpected perſon, brandy or conſerve of roſes, which, they ſay, makes the diſeaſe declare itſelf immediately. Garlic is ſuppoſed to have a ſimilar effect,

It is an univerſally received opinion, that the beſt regimen to obſerve, when one is attacked with the plague, is to eat nothing but fleſh meats, or ſalted fiſh; all other kinds of food are pernicious, and fruits of every kind are mortal. A perſon who had made a great number of obſervations at Conſtantinople, where he was almoner of the *Hoſpice des Francs*, remarked a ſymptom from which he decided in an inſtant whether a patient would die or recover from the diſeaſe; and he never erred, it is ſaid, in his prognoſtic. He obſerved, that when the bubo was little adherent and eaſily moveable, there were well-grounded hopes of recovery; but, on the contrary, if the bubo were abſolutely fixed and immoveable, death was inevitable. The ſame obſerver remarked, alſo, that if a patient, after a paroxyſm of delirium, recovered his reaſon of a ſudden, he rarely eſcaped. Carbuncles are more dangerous than buboes; but if the patient recover under theſe tumours, he is afterwards leſs liable to contagion. Beſides the bubo and the carbuncle, there is another ſpecies of boil which differs from the carbuncle in not turning black. This indicates the moſt imminent danger; but if the patient happily ſurvive it, he is no longer ſubject to an attack of the plague during his life. A perſon may be attacked many times with the plague; a fact little in favour of inoculation. A curious circumſtance, but certain, is, that a perſon who has once had the plague, on going long after into a place where it prevails, feels obtuſe and ſometimes lancinating pains in the parts where the buboes were ſituated. Theſe ſymptoms are even a means of announcing the approaching invaſion of the malady; for perſons have been remarked, on finding themſelves in places where no ſign of the plague prevailing was diſcernible, to complain of theſe lancinating pains, when the ſymptoms of contagion ſoon became manifeſt. The direction and force of the winds contribute to augment or diminiſh the activity of the plagne. It is at the time that the north eaſt wind blows that it exerts its greateſt ravages at Conſtantinople. A violent tempeſt has ſuddenly arreſted the progreſs of the diſeaſe.

M. *Sonnini* relates a mode of prevention practiſed by the Italian monks of the order of St. Francis, eſtabliſhed at *Rhodes*, under the deſignation of *Fathers of the Holy Land*. They pretended, that an infallible means of preſerving one's ſelf from the plague conſiſts in ſwallowing every morning, faſting, a glaſs of one's own urine, with the juice of a lemon ſqueezed into it.

§ 41. *Faſhion in Phyſic.*

The following obſervations on the preſent ſtate of medical practice in Paris may amuſe the reader, and are not, perhaps, altogether inapplicable to the metropolis of more than one great empire. *Mutato nomine, de te fabula narratur.* They are extracted from a work juſt publiſhed, entitled, *Paris a la fin du XVIII. e Siecle* *.

* *Paris a la fin du* 18*me Siecle; ou Eſquiſſe Hiſtorique et Morale des Monumens et des Ruines de cette Capitale; de l'Etat des Sciences, des Arts, et de l'Induſtrie à cette epoque, ainſi que des moeurs et des ridicules de ſes habitans. Par* J. B. Pujoulx. *Paris*, 1801. Imported by Booſey, price 6s.

'Paris,'

'Paris,' the author obſerves, 'has given the *ton* in dreſs, for more than half a century, to the reſt of Europe. This empire of faſhion is now ſomewhat fallen, and does not at preſent extend beyond the limits of France itſelf. The influence of medical faſhion is equally limited. M. *Tronchin*, every one knows, was long the phyſician *a la mode*. He entirely changed the form of ſuperficial medicine (for ſo I would call the kind of treatment practiſed on that claſs of people, with whom to be ill is become a habit, and almoſt a neceſſary of life). Thus *Tronchin* had from a hundred to a hundred and fifty patients who enjoyed the beſt health in the world. This multitude was chiefly made up of women who, being unoccupied by any ſerious paſſion or employment, and engaged in no particular purſuit, yet find it neceſſary to be ſomething, and rather than attract no notice, reſolve on being ſick. Dr. *T.* gained a reputation by the ſingularity of his preſcriptions, which were in perfect contraſt to the temperament and habits of the patient. He commonly recommended forced, and even violent, exertions; and it was not unpleaſant to obſerve *Madame the Marchioneſs* ſcrubbing the floor of the hall, *by the advice of her phyſician.* Emboldened by the ſucceſs of his plan, he ventured farther, and endeavoured to introduce into faſhion ſome new modes of practice in *real* diſorders; but he ſoon diſcovered that all diſeaſes do not originate in imagination, and that deſtructive modes of treatment do not contribute to the making of a fortune.

'A great phyſician is rarely a faſhionable one; the reaſon is, he knows not how to yield to all the caprice of fine ladies, who would make a mere juggle of an uſeful art. About twenty years ago a modiſh phyſician had nearly ruined, by too complaiſant a regimen, the health of a beautiful woman: a ſerious illneſs, inſtead of vapours and affected ſymptoms, took place, and the huſband called in M. *Petit*, who arrived ſometimes, in theſe caſes, early enough to repair the faults of his brother doctor: but neither his frankneſs nor his talents could affect the reputation of the *doctor a la mode;* and the patient, when recovered by the ſkill of M. *Petit*, ſaid to herſelf, 'how vexatious it is to owe one's health to a man of ſuch ſtrange uncouth manners. I am quite impatient to be well, that I may have my own doctor again.'

'Faſhionable practice has undergone a material change for ſome time paſt. Formerly, our ladies wanted to brace up the nervous ſyſtem; the women of the preſent day endeavour all in their power to relax it. Aſk our modern doctors, and they will tell you, that the wealthy claſs enjoy at preſent a vigour of conſtitution that reſiſts all the efforts of medicine. Obſerve, in the ice-ſhops, thoſe beautiful females whoſe roſy cheeks and red brawny arms announce the poſſeſſion of ruſtic health: obſerve them lolling in an elbow chair that groans under their weight: theſe are the ladies that compoſe what is at preſent called good company: but were *Tronchin* again to come amongſt us, I have no doubt he would agree, that it was a leſs difficult taſk to give ſtrength to the women of his time, than to give an air of feebleneſs to theſe robuſt creatures.

'The laſt winter the ſmall pox prevailed in a great degree, and the phyſicians treated their patients, each after his own method. Some ſweated

ſweated them, others almoſt froze them. If it were aſked me, which is the better method? I would adviſe to conſult the bills of mortality.

'It may be expected, perhaps, that I ſhould here give a liſt of modiſh phyſicians; but it has been my determination to name living characters as ſeldom as poſſible: and, beſides, who knows that at the moment this chapter is at the preſs this liſt would be ſtill in repute?

'I cloſe my remarks by a prediction, which will be treated as paradoxical by ſuperficial obſervers: it is, that ten years hence medicine is deſtined to make a vaſt progreſs, thanks to the aid of chemiſtry, which is now become a poſitive ſcience. I ſhall not be ſurprized, if the firſt ten years of the 19th century are marked by the diſcovery of means of curing pulmonary affections, and of diſſolving the ſtone; and if galvaniſm furniſhes a cure for the diſorders which have their origin in the nervous ſyſtem.'

---

§ 42. *On the Preparation of Vinegar:* by M. Parmentier. (Ann. de Chym. No. 110.)

The extenſive employment of the acetous acid for œconomical, medical, and chemical purpoſes, renders it an object of almoſt prime neceſſity. Although its fabrication appears extremely ſimple and inartificial, much depends with regard to its qualities and the cheapneſs of its production, on a number of minute circumſtances in its preparation. Theſe it is the object of M. Parmentier, in the memoir quoted above, to point out and explain.

The antients, the author obſerves, entertained but very confuſed and imperfect notions reſpecting the cauſe of the converſion of wine into vinegar. How, in fact, was it poſſible that they could do otherwiſe, when ignorant of the nature of thoſe principles which perform ſo diſtinguiſhed a part in the acetous fermentation. It is only ſince the diſcovery of the different gaſeous fluids, and their properties, that any rational notions have been entertained on this ſubject. At preſent it is not doubted that oxygene, hydrogene, and carbone are the principal agents which contribute to the formation of vinegar. Theſe three principles, which are found likewiſe in moſt other vegetable acids, cannot form vinegar, but when united together in proportions ſo conſtant and rigorouſly determined that no variation in this reſpect can take place without the immediate formation of new products.

Although the acetous fermentation preſents phenomena analogous to thoſe which accompany the ſpirituous, there is yet a manifeſt difference in ſeveral reſpects. In the latter, for example, there is a conſtant diſengagement of elaſtic fluids, which are formed at the expence of the liquid undergoing fermentation: on the contrary, during the acetous fermentation, the production and ſeparation of gaſeous fluids only take place at certain periods, whilſt at a particular period of the proceſs, an evident abſorption may be remarked. This abſorption conſiſts of the oxygen of the atmoſphere: hence acetification does not take place where this is perfectly excluded.

The

The general conditions requiſite to the formation of good vinegar are four: 1. the acceſs of atmoſpheric air: 2. a temperature ſuperior to that of the atmoſphere: 3. the addition of a ferment or leaven: and, 4. the preſence of a certain quantity of alkohol.

The degree of heat proper for the purpoſe is from 18° to 20° of Réaumer (73° to 76° of Farenheit's ſcale). The employment of a ferment is abſolutely neceſſary to the perfect formation of vinegar, as the fermentation otherwiſe is partial and exceedingly ſlow in being completed, and the acid firſt formed is liable to be again decompoſed, before the proceſs in the reſt is perfected. The neceſſity of the preſence of alkohol to the formation of good vinegar is evident from the well-known fact, that the moſt generous wines are thoſe from which the beſt vinegar is prepared.

The preſervation of vinegar unchanged forms another object of M. Parmentier's conſideration. This has been propoſed to be effected in different ways. The moſt ſimple conſiſts in excluding it from the influence of the air, in proper veſſels, well cloſed and kept in a cool ſituation. The ſame point has been attained by depriving it of a part of the water it contains, by boiling it for a time. For this purpoſe, *Scheele* adviſes the employment of glaſs veſſels *in balneo mariæ*, continuing the proceſs for a quarter of an hour, after which the vinegar may be preſerved unchanged for ſeveral years. Diſtillation, which ſome have recommended, deprives it of its agreeable flavour and ſcent, and is therefore improper for the purpoſe. The freedom from foreign matters, however, and its perfect preſervability, give diſtilled vinegar a preference in certain chemical and pharmaceutical proceſſes. With regard to the concentration of vinegar by freezing, the author obſerves, that the fluid by this means acquires an empyreumatic flavour that renders it diſagreeable for œconomical purpoſes. The addition of muriate of ſoda (ſea ſalt) which ſome have adviſed, ſucceeds for a time, but does not prevent at length the decompoſition and deſtruction of the acid.

The method of detecting the adulteration of vinegar next engages the author's attention. Vinegar is frequently adulterated by acrid ſubſtances, as pimento, and the like; or by the addition of the mineral acids, as the ſulphuric and muriatic acids. The fraud in theſe caſes, however, may be readily detected, by ſaturating a given quantity of potaſh with the acid ſuppoſed to be adulterated, and comparing the quantity of acid neceſſary for this purpoſe with that of vinegar, the goodneſs of which is previouſly known. Or a portion of the vinegar thus ſaturated may be evaporated to a pellicle, obſerving as it cools whether a ſaline precipitate is formed. If there be ſuch, the form of the cryſtals will determine the ſpecies of acid employed in the adulteration. The adulteration with vegetable ſubſtances may in general be determined by the taſte and ſmell.

In concluſion, M. Parmentier treats of the medicinal and œconomical employment of vinegar, and its uſe in the arts: but we need not follow him on theſe topics.

§ 43.

§ 43. *Production of Ammonia from Tartar.*

M. *Lampadius*, of *Freyberg*, has obſerved, that if crude, or, which is better, purified acidulous tartrite of potaſh be heated till no more fumes or flames appear, and water be then added to it, ammonia is produced. It is beſt obſerved while the maſs is ſtill warm. The ſame tartrite may be employed repeatedly, and will ſtill yield ammonia, as long as any carbonaceous matter remains, by merely heating it, and then wetting it with a few drops of water. Acidulous oxalate of potaſh heated in the ſame manner gives a ſimilar reſult. Charcoal *mechanically* united to potaſh does not produce this effect.

---

§ 44. *Electric Acid.*

M. *Volta*, in a late letter to M. *Van Mons*, of *Bruſſels*, communicates a diſcovery which the author regards as of the higheſt importance to phyſical and chemical ſcience. Having reflected on the diſengagement of hydrogen gas which takes place in paſſing the electric ſpark through water, which proves, he thinks, a decompoſition of this fluid to have taken place, he endeavoured to diſcover what became of the oxygen which made a conſtituent part of the decompoſed portion of the water; and he ſoon found it, he obſerves, in a ſlight degree of *acidity* of the remaining fluid, and to which no philoſopher has hitherto paid any attention. Elated at this intereſting diſcovery, and wiſhing to be convinced that his ſenſes had not deceived him, he haſtened to make trial of this water along with ſoda; when, to his great ſatisfaction, he obſerved the formation of *minute ſaline cryſtals*. He conſiders the ſalts thus formed as true *electrates*.

The concluſion here drawn from the experiments of M. *Volta*, admits of a queſtion, in the opinion of ſome French philoſophers. The diſengagement of hydrogen gas, they obſerve, in the partial decompoſition of the water, by means of the electric ſpark, proves that theſe ſparks have introduced into the water an exceſs of caloric, which, by its greater affinity for ſuch an inflammable matter as hydrogen, combines, in preference, with this, and changes it from a ſtate of ſimple fluidity to that of a gas or aeriform ſubſtance. Thence proceeds neceſſarily a greater proportion of oxygen in the remaining water, which ought thus to contain a ſort of *acid of hydrogen*. This, precipitated by the ſoda, muſt become a ſalt: but it may be aſked, what relation this ſalt can have to electricity, the fluid of which is apparently combined with the diſengaged hydrogen, inſtead of having impregnated the remainder of the water? M. *Volta* ſhould have inquired, whether the ſalts thus produced are not of the ſame nature with the muriates of ſoda? If it ſo turned out, his experiments would ſerve to confirm the opinion of *Girtanner* reſpecting the baſe of this ſalt, which in this caſe could be no other than hydrogen.

---

§ 45. *On the chemical Properties of the Urine.*

M. *Prouſt* has lately publiſhed an account of ſome new experiments on the compoſition of urine, which, notwithſtanding the reſearches of the moſt experienced chemiſts on this point, have led to the diſcovery of

of various important facts. Theſe experiments prove, that the urine contains a great variety of conſtituent parts, the whole of which we are probably not yet acquainted with. They ſerve likewiſe to point out the vaſt difficulties that attend the analyſis of animal ſubſtances. From the examination made by M. *Prouſt*, it appears that urine contains the three alkalies, and at leaſt eight acids, in its compoſition; and, perhaps, there are ſtill others. Urine, he obſerves, like all other animal matters, contains *ſulphur*, which is probably a daily product of the living actions, as is the caſe with phoſphorus, iron, carbon, &c. He ſuppoſes, that in the blood, the ſulphur is combined with ammoniac, in the form of hydro-ſulphure. Carbonic acid is found in great quantity in the urine; and in this way the ſyſtem is freed from the carbonic acid formed during digeſtion: the other inſoluble gaſes eſcape by different channels.

The *roſe-coloured ſubſtance.* By this term the author underſtands the ſubſtance, which, during fevers, ſeparates from the urine as it cools, and which is commonly termed the lateritious or *brick-duſt ſediment.* It is different from the lithic or ouric acid. On diſtilling a quantity of freſh urine, a portion of reſin is ſeparated, of the colour and conſiſtence of the reſin of caſtor, of which alſo it poſſeſſes the odour. It is ſoluble in alkohol, and appears to be the ſame ſubſtance with the reſin of the bile, but modified in the urine by ſome particular combinations. M. *Prouſt* ſuppoſes it to be the chief colouring ingredient in urine.

§ 46. *Diſtillation by Means of Cold.*

Dr. *C. Wiſtar*, in the recital of ſome experiments on evaporation, in the tranſactions of the American philoſophical ſociety, obſerves, that a ſlow diſtillation may be performed, by applying cold to the receiver or refrigeratory, without increaſing the heat of the retort, or that of the ſubſtance to be diſtilled; as there will be a continual paſſage of heat from the body to be evaporated or diſtilled into the air of the receiver. This is proved by æther, one third of which is by this means found to paſs over in about thirty hours; whereas, if the receiver were kept in the ſame temperature with the retort, none of the æther would be found to be diſtilled. The ſame thing takes place in a degree with camphor alſo.

§ 47. *Magnetic Property of Nickel.*

M. *Hauy* has made a diſcovery that this ſemi-metal, in its ſtate of greateſt purity, is acted upon by the loadſtone, a property hitherto ſuppoſed to be poſſeſſed excluſively by iron.

§ 48. *Antivenereal Properties of the Acids, &c.*

The importance of the ſubject is a ſufficient inducement for us to circulate, as widely as our means permit, the following plan of a public ſcrutiny of the acids and other analogous medicines which have lately been announced as antivenereal: the trial is propoſed, by Dr. *Beddoes*, to be made at the *Pneumatic Inſtitution* near *Briſtol.* Unleſs ſomething of this kind be undertaken, the queſtion muſt remain in a ſtate of doubt

doubt and indeciſion; for private teſtimony, frequently vague and inconcluſive, is evidently inadequate to its determination.

‘ The idea of a public trial of acids in the venereal diſeaſe ſeems to have been generally approved; and I have now the ſatisfaction of making it known, that the means of ſetting the ſcheme on foot are in my poſſeſſion.

‘ In favour of the meaſure itſelf many reaſons might be adduced. I ſhall truſt to the three following at deciſive;——*the deſirableneſs of a new anti-venereal remedy:—the difficulty of ſatisfying the public mind by individual teſtimony:—and the little diſpoſition manifeſted by the profeſſion at large to take the trouble neceſſary to decide the queſtion.*

‘ I. A greater benefit could ſcarcely be conferred on human ſociety than the diſcovery of a new remedy for the venereal diſeaſe. This is acknowledged by all parties. But however ſtrongly men, experienced in medicine, may feel the urgency of the exiſting neceſſity, no general terms can convey an idea of it to others. The relation of particular facts would far exceed the bounds of a proſpectus, or do the ſubject the greateſt injuſtice. Where the conſtitution, from early miſmanagement, becomes thoroughly impregnated with the venereal poiſon, mercury not unfrequently fails, or, by the uſe of this ſevere medicine, the patient dearly earns a ſhort reſpite from his daily and nightly tortures. This is more commonly the lot of the ignorant and the poor, of whom, after they have in vain tried hoſpital practice and advertiſed medicines, it remains untold in what corner they hide themſelves to be preyed upon by their unrelenting diſorder. But mercury (which muſt ſtill be allowed a ſtation in the foremoſt rank among the articles of the *Materia Medica*) proves alſo the occaſional ſcourge of the wealthy and the knowing. In particular inſtances, however ſkilfully managed, it is ineffectual, or it aggravates the complaint. When it anſwers the immediate end, it gives riſe to diſorders, that either ſoon arrive at a fatal termination; or blaſt the ſpring of life, induce premature decay, and afflict advancing years with evils not their own. The tranſmiſſion of the proper venereal diſeaſe is diſputed. But what concerns ſociety full as much is indiſputable; namely, the tranſmiſſion of morbid tendencies, engendered by its reputed *ſole ſpecific.* Hence the ſpectacle of parents, condemned to witneſs their youthful imprudencies, viſited upon their children, too often occurs to thoſe to whom the interior condition of human beings is laid open without diſguiſe.

‘ In corroboration of this ſtatement I may appeal to our cities, our univerſities, the army and the navy. Wherever youth feels and indulges its ordinary propenſities, there mercury lays the foundation of evils, the contemplation of which ought ſurely to produce ſomething beyond barren horror or commiſeration.

‘ From ſuch a picture it is grateful to turn to the reports which the late controverſy concerning acids has produced. For however at variance in another reſpect, the reporters wonderfully agree in repreſenting them as innoxious or beneficial to the conſtitution. By thoſe who deny their ſpecific virtue they are generally commended as counteracting that baneful operation of mercury, which renders ſome other reſource deſirable.

desirable. And were a new remedy once received, I have no doubt but the very thing would happen again, of which we have at the present moment so remarkable an example. The press would thunder with remonstrances against the deleterious mineral so long in use; just as the pernicious consequences of the inoculated small-pox are now every where placed in strong relief before the public eye; though, till the introduction of the cow-pox, these consequences were kept out of sight.

'II. Could the mass of testimony either for or against the acids be annihilated, that on the other side must, from its multiplicity and strength, decide the public opinion. What, therefore, can be expected from fresh accessions of private testimony? If *success* is announced, how easy to suppose a mistake in regard to the disease, or to find some other method of explaining away the fact! *Failure* may be equally imputed to mismanagement; for nothing is so easy as to administer acids with safety to the patient, but without effect on the disease The dispute therefore will be left as it stands. Nor will the negligent, the lukewarm, the biassed, and the envious, be at a loss for unsuccessful reports, till they shall feel the controul of general opinion established upon experiments beyond the reach of cavil.

'I am anxious that the full force of this argument should be felt, to which I believe an examination of both sides of the question will be necessary. I therefore apprise those who are interested in the fate of humanity, that the chief evidence at present existing will be found in the following works.

1. Beddoes's Collection of Testimonies. 1799. Johnson.
2. Ditto Communications respecting the Use of Nitrous Acid. 1800. Ditto.
3. Rollo on Diabetes Mellitus. 2d edit. 1799. Mawman.
4. Blair's Essays on the Venereal Disease. Part I. 1798. Johnson.
5. Ditto. Part II. 1800.
6. Pearson's Observations on various Articles in the Lues Venerea. 1800. Callow.

'The names of those who stand on opposite sides in this controversy will shew the improbability of fixing opinion by appeals to solitary observation. As witnesses for the acids, we have Dr. Helenus Scott, Bombay, who had cases inspected by the medical board; Mr. Baynton, Bristol; Dr. Geach and Mr. Hammick, Royal Naval Hospital, Plymouth, where many cases were inspected by the neighbouring practitioners; Dr. Rutherford and Dr. Hope, Professors, Edinburgh; Dr. Wurzer, Professor, Bonn; Dr. Rollo, physician, Royal Artillery, Woolwich; Mr. Cruickshank, professor there; Dr. Witman, ibid.; Dr. Irwin, ibid.; Mr. Kellie; Dr. Albers, Bremen; Mr. Symes; Mr. Sandford, Worcester; Mr. Lawrence; Dr. James Currie, Liverpool; Dr. Clarke, Newcastle; Mr. Dunning, Plymouth-Dock; Mr. Davy, Royal Institution, London; Mr. Custance, Kidderminster; Mr. Macgriger, 88th reg. (who also attests the permanency of Dr. Scott's cures in some of the most inveterate cases that occur); Dr. G. Keir, Bombay; Mr. Steuart, ibid.; Mr. Boag, ibid.; Mr. W. Grieve, 77th

reg. Mr. Brydon (imperfect ſucceſs), Mr. Griffith, Dr. Croſſe, Nevis; Dr. Chiſholm, Grenada; †Dr. Carrick, †Dr. Trotter, Mr. Browne, Dr. Davidſon, Martinico; Dr. Beddoes.

'Of theſe and other practitioners, to whoſe names I cannot now refer, the ſucceſsful experience probably amounts to three thouſand primary and ſecondary caſes.

'On the oppoſite ſide ſtand, Mr. Blair and Mr. Pearſon, Lock Hoſpital, London; Mr. Bowles, Briſtol; Dr. Carmichael, Birmingham; Mr. Addington, Dr. Ramſay, Newcaſtle; †Mr. Macartney, Dr. Rowley, Mr. Phillips, Dr. Hooper, Dr. Lidderdale, Dr. Buchan, junr. Mr. Hope, Mr. De Bruyne, London; †Dr. Mitchell, Chatham; Mr. Simmons, Mancheſter; *Mr. Blizard, *Mr. Heaviſide, *Mr. B. Bell, *Mr. T. Fitzmaurice, *Dr. Mitchill, New York; Mr. Lynd, Mr. Wadd, Mr. Wickham, Mr. Ch. Brown; Dr. Boettcher, Warſaw; Dr. Aubert, Paris.

'Theſe practitioners (Dr. Boettcher excepted) uſed only nitrous acid and oxygenated muriate of potaſh internally. Their caſes ſeem to have been far leſs numerous and leſs inſpected by profeſſional bye-ſtanders.

'The negative teſtimony, however, I believe, is not near ſo ſtrong as the bare muſter-roll implies: and if ſo, this is a powerful motive for inquiry on a new plan. The practitioners diſtinguiſhed by an aſteriſk give a mere opinion, unſupported by facts. Others (as Mr. Macartney), though they decide negatively, relate ſtrongly affirmative reſults; and moſt ſuſpicious circumſtances attend a large proportion of the unfavourable reports. Of the exiſtence of ſuch circumſtances I have furniſhed uncontroverted proofs in the firſt and ſecond of the publications above enumerated I need not, therefore, here expoſe the policy by which thoſe to whom alteration in practice is odious were united under the adverſe ſtandard, with thoſe who feel an *a priori* aſſurance that *the venereal diſeaſe admits of no remedy but mercury.*

'III. It has been ſurmiſed that the maſs of atteſtations lately collected, and the accumulated proofs of a proper ſalivating power in acids, would ſet innumerable inquirers at work. A conſiderable time has, however, elapſed, and there are tokens enough of a communicative diſpoſition among the faculty. Yet no ſingle ſymptom of the predicted ardour of inveſtigation has tranſpired.

'Further reaſons will hardly be required, otherwiſe I might go on to explain what a blow empirical impoſture would receive from the aſcertainment of anti-venereal power in new ſubſtances; and how much our medial logic would be improved: for it is hardly conceivable to what a degree the excluſive opinion, commonly entertained, narrows our views of organic ſuſceptibility, as if it were poſſible that any conſiderable proportion of the medicinal treaſures of nature could be known, when in the courſe of ages no enterpriſe of diſcovery worth mentioning has been undertaken!'

'It remains that the inquiry be unexceptionably conducted; ſo that Europe may be no longer defrauded of that benefit from acids which India is unanimouſly atteſted to enjoy. All doubt as to the nature of the

the caſes muſt be obviated. Hence it ſhould be a rule to receive no patient without a ſtatement ſigned by at leaſt three phyſicians or ſurgeons. And every patient muſt be inſpected, on his reception and during the treatment, by practitioners on the ſpot.

'But the public muſt be ſatisfied that the medicines alledged are adminiſtered, and no others. A perſon, worthy of confidence, muſt therefore be engaged to ſuperintend the treatment. And although this perſon, in common with others, may exerciſe his judgment upon the caſes, nothing will reſt on his ſingle opinion.

'The author of this paper having actually tried many varieties of acid medicines, and formed other combinations in his mind, propoſes to *direct* the treatment. But he will hold no communication with any patient but in the preſence of the ſuperintendant.—To him, in his ſituation, celebrity in any other common diſorder would be far more lucrative. But as the conſignment to his care of the papers, relative to a practice that was originally promoted by his crude ſpeculations, firſt engaged him in the queſtion, ſo a ſenſe of its importance now induces him to ſubmit to exertions in bringing it to an iſſue. He is convinced that many more difficult inveſtigations may be propoſed in medicine, but not one more immediately uſeful.

'He ſtill abides by the opinion expreſſed in his letter to Mr. Pearſon, "*that the patients muſt be perſons of regular conduct, and concerning whom we may be able to procure information at a conſiderable diſtance of time.*" (Communications, p. lxi.)

'It will be neceſſary, perhaps, to take ſome pledge for the perſeverance of the patient, to whom it ſhould be previouſly explained that he is to be treated on a plan ſuppoſed, on ſuch and ſuch grounds, efficacious and leſs trying to the conſtitution than the mercurial. As ſoon as it ſhould be deemed improper to diſcontinue the new plan, the old one would be adopted.

'Patients with the proper certificate would be admitted to the number of twelve; and though little ſtreſs would be laid on out-patients, yet any number of theſe would be treated.

'One day in the week, at certain hours, the houſe would be open to all viſitors whatſoever. The practitioners who chooſe to obſerve and atteſt theſe experiments muſt have the neceſſary acceſs to the patients.

'The firſt object in view is to ſatisfy the public if certain ſubſtances not mercurial are, or are not, remedies for the confirmed venereal diſeaſe. But I could alſo wiſh to continue the trials till ſome judgment can be formed whether, if they be anti-venereals, they equal mercurial preparations in virtue.

'With the neceſſary co-operation on the part of the profeſſion to ſupply patients and obſerve the treatment, I truſt that, with what I may afford from my own purſe, added to the remainder of the ſubſcriptions to the Pneumatic Inſtitution (which the committee is willing to have expended in this manner), and to ſome contributions for this expreſs purpoſe, I ſhall be able to ſolve the firſt queſtion.

'Whether I shall have ability or funds to solve the second, will depend upon the opulent part of the public. That they will feel how deeply they are interested in the subject, I cannot foresee. But, for helping to render this inquiry more full and satisfactory, those among their sons, who are liable to have their constitutions impaired or destroyed by the operation of mercury, would owe them greater obligations than for a large patrimony. And (if on such a subject one may speak the truth in defiance of false delicacy) they will not less essentially serve their daughters, by saving their future husbands from the ravages of the same remedy.

'THOMAS BEDDOES.

'*Those who may incline to support this scheme, are desired to forward their subscriptions to Messrs. Coutts and Co. Bankers, Strand, London; or to Messrs. Savery and Pugh, Bankers, Bristol.*'

---

§ 49. *Purification of Rapeseed Oil by Sulphuric Acid.*

The following method of purifying *rape oil* has been lately communicated to the public, through the medium of the *Journal de Physique*, *an.* 9, by M. *Thenard.* From 1 ½ to two parts of the sulphuric acid are to be mixed with one hundred parts of the oil, which soon becomes turbid, and acquires a blackish-green tint, and at the end of three-quarters of an hour the oil is full of flakes. Double the weight of water is then to be added to remove the sulphuric acid, which, if suffered to remain too long undiluted with the oil, would exercise too strong an action on it, and char it. The mixture must then be well agitated for a considerable time, and left to rest. When it has rested for about eight days, the oil will float on the surface of the water, and the latter will itself float on a black matter, precipitated from the oil by the sulphuric acid: it is this matter which colours the oil, and prevents it from burning with facility. By filtration through pounded charcoal, and a linen or cotton cloth, the oil, after being treated as above, is rendered immediately limpid and transparent. The process here indicated may, perhaps, be applied with advantage in the purification of other foul and impure oils.

---

§ 50. Humboldt's *Travels in South America.*

M. *Humboldt*, whose ardour in scientific pursuits is well known, and who is at present braving dangers of all kinds in the inhospitable climate of South America, has lately communicated to his friend, Cit. *Fourcroy*, some fruits of his researches, calculated to excite the wonder of his European readers. The following are a few of the most striking.

'During the sixteen months,' M. *H.* observes, 'we have been traversing the vast territory situated between the coast, the Orenoquo, Rio-Nigro, and the river of the Amazons, C. Bonpland has dried, with duplicates, more than six thousand plants. I have described with him on the spot twelve hundred species, great part of which appeared to us to belong to genera not described by Aublet, Jacquin, Mutis, or Dombey. We have collected insects, shells, and different kinds of wood

wood proper for dyeing; we have diſſected crocodiles, lamantins, apes, and the gymnotus electricus, the fluid of which is abſolutely galvanic, and not electric; and have deſcribed a great many ſerpents, lizards, and fiſh.

'I have made drawings of a great number of objects; in a word, I flatter myſelf, that if I have erred it is rather through ignorance than want of activity. What enjoyment to live in the midſt of theſe riches of Nature, ſo majeſtic and grand! Behold, then, the deareſt and moſt ardent of my wiſhes gratified! Amidſt the thick foreſts of the Rio-Nigro; ſurrounded by ferocious tigers and crocodiles; my body tormented with the ſtings of the formidable moſkitos and ants; having had for three months no other aliment than water, bananas, and manioc, among the Otomaqua Indians, who eat earth; or on the banks of the Caſquiara, under the equator, where, in the courſe of a hundred and thirty leagues, no human being is ſeen;—in all theſe embarraſſing ſituations I never repented of my undertakings: my ſufferings have been great, but they were only momentary.

'When I left Spain, I intended to proceed directly to Mexico, thence to Peru and the Philippines; but a malignant fever, which broke out in our frigate, induced me to remain on this coaſt of South America; and, thinking it poſſible to penetrate thence into the interior, I undertook two journies, one to the miſſions of the Chayma Indians of Paria, and the other to that vaſt country ſituated to the north of the river of the Amazons, between Popayan and the mountains of the French part of Guyana. We twice paſſed the grand cataracts of the Orenoquo, and thoſe of Atures and Maypura, in lat. 50° 12′ and long. 5° 39′, W. dep. from Paris 4° 43′ and 4° 41′ 40″. From the mouth of the Guaviara and the rivers Atabapo, Temi, and Tuamini, I cauſed my pirogua to be carried by land as far as the Rio-Nigro, while we followed on foot through foreſts of Hevea, Cinchona, and Canella Wintertona. I deſcended the Rio-Nigro as far as Saint Carlos*, that I might determine its longitude by Berthoud's time-keeper, with which I am ſtill well ſatisfied. I aſcended the Caſquiara inhabited by the Ydapaminares, who eat nothing but ants dried in the ſmoke. I penetrated to the ſources of the Orenoquo, even beyond the volcano of Duida, or as far as the forocity of the Guaica and Guaharribbo Indians would permit me to venture, and I deſcended the whole of the Orenoquo, by the force of its current, as far as the capital of Guyana; performing a journey of 500 leagues in twenty-ſix days, without counting thoſe on which we ſtopped.

'My health has withſtood all the fatigues of a journey of more than 1300 leagues; but my poor companion, C. Bonpland, had nearly fallen a victim to his zeal and devotion for the ſciences. After our return, he was attacked by a violent fever, accompanied with a dangerous vomiting; which, however, was ſpeedily cured.

'The river of the Amazons has been inhabited for 200 years by Europeans; but on the Orenoquo and the Rio-Nigro, it was only

* The error in the latitude (d'Anville's chart) is more than two degrees, as it had never been determined by aſtronomical inſtruments.

about thirty years ago that the Europeans ventured to form a few ſettlements beyond the cataracts. Thoſe which exiſt do not comprehend above 1800 Indians, from the eighth degree to the equator; and there are no other whites than ſix or ſeven miſſionary monks, who did every thing they could to facilitate our journey.

'From St. Thomas, the capital of Guyana, lat. 8° 8′ 24″, long. 4° 25′ 2″, we croſſed once more the great deſert called Elanos, inhabited by wild cattle and horſes. I am now employed in conſtructing a map of the country through which I have travelled. I have been ſo fortunate as to make aſtronomical obſervations in fifty-four places. I obſerved at Caraccas, Cumana, and Tuy, twelve eclipſes of the ſatellites of Jupiter; an eclipſe of the ſun on the 28th of October 1799. By theſe means, and the chronometer, I flatter myſelf I ſhall be able to give a very exact map. We ſhall embark here at length for the Havannah, from which we ſhall proceed to Mexico.—Such is the ſummary of my travels. I know that you, Chaptal, Vauquelin, Guyton, are all intereſted in my fate; and for that reaſon I am not afraid of tiring you.

'We have ſcarcely any communication here with Europe. I have often attempted to write to you, as well as to our friends Vauquelin and Chaptal. I have ſent you ſome experiments on air, and the cauſe of miaſmata. I have ſent to Delambre and Lalande extracts from my ſmall aſtronomical obſervations. Have any of theſe reached the place of their deſtination? By the conſul of the republic at St. Thomas I tranſmitted to you the milk of a tree which the Indians call the *cow*, becauſe they drink this milky juice, which is not at all prejudicial, but exceedingly nouriſhing. By the help of the nitric acid I have made caoutchouc, and I mixed ſoda with that deſtined for you, according to the principles which you yourſelf fixed.

'In the month of January laſt we ſent, by the corvette Philippina, a collection of ſeeds for the *Jardins des Plantes* at Paris. We know they have arrived, and muſt have been delivered to citizens Juſſieu and Thouin by the ambaſſador of the republic at Madrid. By the flag of truce, which we expect here from Guadaloupe, the Muſæum will receive other articles; for at preſent we muſt be ſatisfied with preſenting you a few objects for your chemical analyſis.

'I have procured for you the *curare*, or celebrated poiſon of the Indians on the Rio-Nigro. I undertook a journey to Enneralda on purpoſe to ſee the liane, which produces this juice, but unfortunately we found it without flowers; and to ſee the method practiſed by the Catarapeni and Maquiritares Indians for making this poiſon. I ſhall give you, ſome other time, a more ample deſcription of it. I ſhall only add, that I ſend you the *curare* in a box of tin plate*, and the branches of the plant *maracury*, which produces the poiſon. This liane grows, but not in great abundance, among the granitic mountains of Guandia and Yumariquin, under the ſhade of the obromacacao and the caryocar.

* This box, and the other articles announced here, have not yet reached C. Fourcroy.

The

The Indians take off the epidermis, and make an infuſion of it cold, having firſt expreſſed the juice; they then leave the water over the epidermis half expreſſed, and afterwards filter the infuſion. The filtered liquor is yellowiſh: it is then baked, and concentrated by evaporation and inſpiſſation to the conſiſtence of molaſſes. This matter contains already the poiſon, but not being ſufficiently thick to daub over the points of their arrows, they mix it with the glutinous juice of another tree, which they call *kiracaguero*. This mixture is again baked till the whole is reduced to a browniſh maſs. You know that the *curare* is taken internally as a ſtomachic: it is not noxious but when it comes into contact with the blood, which it de-oxydates. It is only a few days ago that I began to make experiments upon it, and I have found that it decompoſes atmoſpheric air. I beg you will try to de-oxydate with it the metallic oxyds, and that you will examine whether the experiments of Fontana were properly made.

‘ I add to the *curare* and the *maracury*, the *dapitche*, the *leche de pindare*, and the earth of the Otomaquas. The *dapitche* is a ſtate of the elaſtic gum, which is, no doubt, unknown to you. We diſcovered it in a place where there is no hevea, in the marſhes of the mountain of Javita, lat. 2° 5′, which are famous on account of the terrible ſerpents, of the boa kind, found in them.

‘ Among the Pormiſano and Paragini Indians we ſaw muſical inſtruments made of the caoutchouc, and the inhabitants told us they found it in the earth. The *dapitche* or *zapir* is really a ſpongy white maſs found under the roots of two trees, which appeared to us of a new genus, the *jacio* and the *curvana*, and of which we ſhall one day give a deſcription. The juice of theſe trees is a very aqueous milk, but it appears that it is a malady in theſe trees to loſe the juice by the roots. This diſcharge cauſes the tree to periſh, and the milk coagulates in the moiſt earth, where it is preſerved from the contact of the air. I ſend you the *dapitche* itſelf, and a maſs of caoutchouc made from it, merely by expoſing it to heat or diſſolving it over the fire. This production, and the milk of the *cow*, in your hands, will ſerve to throw new light on this ſubſtance, ſo curious in a phyſiological point of view.

‘ The *leche de pindare*, which is the dried milk of a pindar-tree, is a natural white varniſh. The Indians cover their veſſels and *tacuma* with this milk when it is freſh. It dries ſpeedily, and forms a very beautiful varniſh; but, unfortunately, it becomes yellow when dried in a large maſs; and it is in this ſtate that I ſend it to you.

‘ In regard to the earth of the Otomaquas, I muſt obſerve that this nation, ſo hideous by the paintings which disfigure their bodies, when the Orenoquo is very high, and they can find no tortoiſes, for three months eat ſcarcely any thing but a kind of fat earth. There are ſome of them who eat a pound and a half of it per day. Some of the monks aſſert, that they mix with it the fat of the tails of crocodiles: but this is falſe. We found among the Otomaquas ſtores of the pure earth which they eat: they give it no other preparation than that of burning it ſlightly, and rendering it moiſt. It appears to me aſtoniſhing that people can be robuſt, and eat a pound and a half of earth daily, while we find that earth produces a very pernicious effect among children.

My

My own experiments on earths and their properties, however, give me reaſon to ſuſpect that they may be nouriſhing; that is to ſay, that they may act by affinities.

'I add for the Muſæum, becauſe it has fallen into my hands, the ſmoking inſtrument of the Otomaquas, and a ſhirt of the Piroas, a neighbouring nation. This ſmoking inſtrument is none of the ſmalleſt, as you will ſee. It is a kind of plate, on which they place the raſped and rotten fruit of a mimoſa, mixed with ſalt and a little quick-lime. The Otamaqua holds the plate in one hand, and in the other the tube, the two ends of which enter his noſtrils, that he may inhale this ſtimulating tobacco. This inſtrument has a hiſtorical intereſt: it is common only to the Otomaquas and the Omeguas, two nations who are at preſent 300 leagues diſtant from each other, among whom Condamine ſaw it. It proves that the Omeguas, who, according to an old tradition, came from Guaviara, may be deſcended from the Otomaquas, and that the city of Manoa was ſeen by Philip de Vure between Meta and Guaviara. Theſe facts are intereſting in regard to the origin of the fable of the *Dorado*.

'The ſhirt, which one of my people wore for a long time, is the bark of the tree called *morima*, without any preparation. You ſee that ſhirts grow upon trees in this country, and near the Dorado, where I found no mineral curioſities but talc and a little titanium.'

§ 51. *On the Suſceptibility for Cow-pox after Small-Pox.*

The following experiments are from an inaugural diſſertation, publiſhed in June laſt at Edinburgh, by *Archibald Bruce*, A. B. of *New York*. They confirm Dr. *Pearſon*'s experiments, ſhewing that perſons who have gone through the ſmall-pox cannot go through the cow-pox.

'Exper. 1. I (who had the ſmall-pox many years ago), in February laſt 1801, inoculated myſelf with the vaccine infection.

'On the third day a ſlight inflammation appeared on the inoculated part, which increaſed till the ſixth, when a ſmall puſtule containing a limpid fluid was formed, which, on the eighth day, had become a mere ſcab; and this fell off on the ſixteenth day. There was no diſorder of the conſtitution.

'Exper. 2. February 1801. *Anne Fleming*, ten months old, was inoculated with matter taken from my hand. She had not had the ſmall pox.

'On the fourth day after inoculation, inflammation appeared. On the 10th day a well formed circular puſtule appeared; the redneſs was very conſpicuous all around the puſtule, with ſwelling and tenſion of the axilla, and a ſlight general fever. The feveriſh ſymptoms ſubſided gradually, and on the thirteenth day a ſcab began to be formed, which fell off on the twenty-ſecond.'

A correſpondent makes inquiry reſpecting a cutaneous affection known in the Levant under the French denomination of *mal d'Alep*, or diſorder of Aleppo. Is it referable to any of the ſpecies contained in our noſological ſyſtems? or has it been treated of by writers

writers on the diſeaſes of that part of the world? The *mal d'Alep* is thus deſcribed by the author of a book of Travels in Egypt and Turkey lately publiſhed in France *. It is commonly attributed to the bad quality of the water; the author, however, thinks it is more likely owing to the uſe of new dates, mulberries, and piſtachio nuts. It is a cutaneous malady that attacks equally men and women, young and old, ſtrangers and natives of the country. It affects all the joints of the body, the neck, hands, elbows, noſe, and feet; and, in women, the cheeks. There are two ſpecies of it, which they term male and female: the latter is the moſt virulent, and appears in ſeveral parts at once. Both of them begin by a ſmall hard and reddiſh tubercle, which is not painful at firſt: this afterwards ſpreads, is attended with a pricking pain, and after ſome months falls into ſuppuration: by degrees a ſcab forms, which does not fall off till the diſeaſe is internally cured, which uſually is not effected in leſs than a twelvemonth, the ordinary time of its duration. A deep and indelible cicatrix remains, of a livid colour. Great care muſt be taken not to irritate the ſore by the touch, and to waſh it twice or thrice a day with milk, which is the only remedy employed. This affection is not confined to Aleppo, but appears to be endemic at *Diarbekir*, where it is called the annual diſeaſe (mal d'une année), from the uſual period of its duration. Perſons are liable to repeated attacks of it, and in ſuch caſes are frequently much disfigured by the cicatrices it leaves behind.

AN

ACCOUNT OF THE LECTURES

IN THE

DIFFERENT BRANCHES OF MEDICINE;

Which will be Read in London the ensuing Winter.

No. 1.

ST. THOMAS's and GUY's united HOSPITALS.

Anatomy and Surgery, by Mr. Cline, and Mr. Astley Cooper,
Beginning Thurſday October 1, at one o'clock.

Practice of Medicine, by Dr. Babington,
Friday October 2, ten morning.

* Nouveau Voyage de Conſtantinople a Baſſora, par le Deſert et Alexandrie: traduit de l'Italien, 8vo. Paris, 1800. Imported by Booſey, London.

Midwifery,

Midwifery, and Diseases of Women and Children, by Dr. LOWDER and Dr. HAIGHTON,

On Saturday October 3, at eight in the morning.

Chemistry and Experimental Philosophy, by Dr. BABINGTON and the Rev. Mr. ROBERTS,

On Saturday October 3, at ten in the morning.

Physiology, or Laws of the Animal Economy, by Dr. HAIGHTON,

On Monday October 5, at a quarter before seven in the evening.

Theory of Medicine, and Materia Medica, by Dr. CURRY,

On Tuesday October 6, at seven in the evening.

Principles and Practice of Surgery (illustrated by select cases under his care in Guy's Hospital), by Mr. ASTLEY COOPER,

On Monday October 12, at eight in the evening.

In addition to these, Dr. SAUNDERS will, early in October, begin *A Course of Clinical Lectures* on select medical cases under his care in Guy's Hospital.

N. B. These several lectures are so arranged as not to interfere with each other in the hours of attendance.

Terms and other particulars of the lectures to be had at the hospitals, or at Mr. Cox's, bookseller, St. Thomas's Street, Borough.

In the course of the season, Mr. Fox will deliver his Lectures on the Anatomy and Diseases of the Teeth.

No. 2.

ST. BARTHOLOMEW's HOSPITAL.

The following course of Lectures will be delivered at this hospital.

On the Theory and Practice of Medicine, by Dr. ROBERTS.

On Anatomy and Physiology, by Mr. ABERNETHY.

On Comparative Anatomy, by Mr. MACARTNEY.

On the Theory and Practice of Surgery, by Mr. ABERNETHY.

On Chemistry and the Materia Medica, by Dr. POWELL.

On Midwifery and the Diseases of Women and Children, by Dr. THYNNE.

The lectures will begin on Thursday October 1. Further particulars may be known by applying to Mr. Nicholson, at the apothecary's shop, St. Bartholomew's Hospital.

No. 3.

LONDON HOSPITAL.

The Lectures on Anatomy, Physiology, and the Principles and Operations of Surgery, with Practical Anatomy, as usual, will commence on the 1st of October, by Mr. BLIZARD, Mr. T. BLIZARD, and Mr. HEADINGTON, surgeons of the hospital.

On the same day, Dr. DENNISON and Dr. SQUIRE, physicians and men-midwives to the Lying-in Charity for delivering poor married women at their own habitations, will commence their lectures on the Theory and Practice of Midwifery, and the Diseases of Women and Children: the former at eleven in the forenoon, at the London Hospital,

pital; the latter at ſix in the evening, at their theatre in Paul's Chain, Doctors Commons.

In addition to a conſtant ſupply of labours for practical improvement, gentlemen will have frequent opportunities of viſiting patients in diſorders during pregnancy, and the advantage of ſeeing the treatment of diſeaſes incident to the ſtate of child-bed and early infancy.

No. 4.

MEDICAL and CHEMICAL LECTURES.

The firſt week in October a Courſe of Lectures on the Materia Medica, Practice of Phyſic and Chemiſtry, will recommence at the Laboratory, in Whitcomb Street, Leiceſter Square, at the uſual morning hours, viz. the Materia Medica at a quarter before eight; the Practice of Phyſic at half after eight, and the Chemiſtry at a quarter after nine, by GEORGE PEARSON, M. D. F. R. S. ſenior phyſician to St. George's Hoſpital, and of the College of Phyſicians.

A regiſter is kept of the caſes of Dr. Pearſon's patients, in St. George's Hoſpital; and an account is given of them at a Clinical Lecture every Saturday morning, at nine o'clock.

Propoſals may be had at St. George's Hoſpital, and in Leiceſter Square.

No. 5.

MEDICAL and CHEMICAL LECTURES,

By ALEXANDER CRICHTON, *M.D.F.R.S.*

On Monday 12th October, Dr. Crichton will commence his autumnal Courſe of Lectures on Medicine and Chemiſtry, at his Lecture Room, in Clifford Street, Bond Street.

The Lectures on the Theory and Practice of Phyſic will be delivered every day (Sunday excepted) at eight o'clock in the morning; thoſe on Chemiſtry every Monday, Wedneſday, and Friday, at nine; and thoſe on Materia Medica every Tueſday, Thurſday, and Saturday, at the ſame hour.

Further particulars may be obtained by applying to Dr. Crichton, at his houſe, No. 15, Clifford Street.

No. 6.

Dr. BRADLEY will commence his autumnal Courſe of Lectures on the Theory and Practice of Medicine, on Monday October the 5th, at the Lecture Room, No. 102, Leadenhall Street, at ſix in the afternoon.

The courſe will conſiſt of about ſeventy lectures. Terms, three guineas. Private courſes, for the accommodation of young ſurgeons in the navy or army, are continued every morning at Dr. Bradley's, Weſtminſter.

A ſhort Courſe of Lectures on the Principles of Pharmaceutical Chemiſtry, will be given two evenings in the week, by an experienced chemiſt.

No. 7.

THEATRE OF ANATOMY, GREAT WINDMILL STREET.

Mr. Wilson's Lectures on Anatomy, Phyſiology, Pathology, and Surgery.

Two courſes are read during the winter and ſpring ſeaſons; one courſe beginning on the 1ſt day of October, and terminating on the 18th day of January; the other courſe beginning on the 19th day of January, and terminating towards the middle of May.

In each courſe is explained the *ſtructure* of every part of the human body, ſo as to exhibit a complete view of its anatomy as far as it has been hitherto inveſtigated: to which are added, its *Phyſiology* and *Pathology*; after which follow Lectures on the *Operations of Surgery*; and the courſe concludes with the anatomy of the *Gravid Uterus*.

DISSECTIONS.

A room is likewiſe open for Diſſections, under the direction of Mr. *Wilſon* and Mr. *Thomas*, from nine o'clock in the morning till two in the afternoon, from the 10th day of October till the 20th of April, where regular and full demonſtrations of the parts diſſected are given; where the different caſes in ſurgery are explained, the methods of operating ſhewn on the dead body; and where alſo the various arts of *injecting* and *making preparations* are taught.

Further particulars may be known by applying to Mr. *Wilſon*, Argyle Street; Mr. *Thomas*, Leiceſter Square; or at the Anatomical Theatre.

Mr. Thomas will commence his winter Courſe of Lectures on the Principles and Practice of Surgery, on Monday, October 5, in which the different operations will be performed, and the medical treatment fully explained.

Further particulars may be known at his houſe, Leiceſter Square, or at the Anatomical Theatre, Windmill Street.

No. 8.

Mr. Pearson, ſurgeon of the *Lock Hoſpital* and *Aſylum*, and of the *Public Diſpenſary*, will begin his autumnal Courſe of Lectures on the Principles and Practice of Surgery, on Monday October the 5th, at ſeven o'clock in the evening, at his houſe in *Golden Square*. In this courſe will be delivered an extenſive view of the hiſtory and treatment of *Scrofula* and *Lues Venerea*.

No. 9.

Mr. Chevalier, ſurgeon of the *Weſtminſter General Diſpenſary*, will commence his autumnal Courſe of Lectures on the *Principles* and *Operations of Surgery*, on Monday evening, October the 5th, at ſeven o'clock, at his houſe in South Audley Street, Groſvenor Square, where printed particulars may be had; or at the *Diſpenſary*, in Gerrard Street, Soho.

No.

No. 10.

Mr. Carpue will commence his Anatomical Lectures, at his Theatre, Broad Street, Golden Square, on Monday the 5th of October, 1801. The *structure* of the human body will be explained, as also its *physiology*. The operations of surgery will be shewn on the dead body. Mr. C.'s plan prevents him from taking more than ten pupils. Every day he demonstrates some part of the human body to the pupils, who are required to demonstrate it afterwards to him. *Myology* is not taught till the pupils are perfectly instructed in *osteology*, &c. &c. A general examination takes place every tenth day; and if the pupils do not perfectly recollect any of the parts that have been lectured on, they are again demonstrated.

The dissecting room will be open from nine o'clock in the morning till half past two. The pupils are here taught the method of operating, as also the art of injecting and making preparations.

Further particulars may be known by applying to Mr. *Carpue*, at his house, No. 44, Leicester Square.

No. 11.

On Monday the 30th of September, Mr. Brookes will commence his autumnal Course of Lectures on *Anatomy*, *Physiology*, and *Surgery*. Practical Anatomy and Demonstrations as usual.

Particulars may be known by application at the house of Mr. B., Blenheim Street, Great Marlborough Street.

No. 12.

MIDWIFERY.

Dr. Osborn's and Dr. Clarke's Lectures upon the *Principles and Practice of Midwifery*, and the *Diseases of Women and Children*, will be continued during the ensuing winter, as usual.

The Lectures will be given in future only at the house of Dr. *Clarke*, in *New Burlington Street*, at half past ten in the morning, for the convenience of students who attend the different hospitals and lectures. The first course will begin on Friday October 2, 1801.

No. 13.

Dr. Batty will begin his usual Course of Lectures on the Theory and Practice of Midwifery, and on the Diseases of Women and Children, on Monday October the 5th, at his house in *Great Marlborough Street*, at eleven o'clock in the morning.

No. 14.

On the 5th October, T. Pole, Man-midwife Extraordinary to the Obstetric Charity, will commence his Course of Lectures on the Theory and Practice of Midwifery, including the Diseases of Women and Children, at his house, No. 102, Leadenhall Street, near the Royal Exchange.

Printed particulars may be had by applying to T. Pole.

No.

No. 15.

VETERINARY COLLEGE.

Mr. Coleman, Profeſſor of the Veterinary College, Veterinary Surgeon General to the Britiſh Cavalry, and to his Majeſty's moſt honourable Board of Ordnance, will begin his Courſe of Lectures on the *Anatomy*, *Phyſiology*, and *Pathology* of the Horſe, on Monday November, 2, at eleven o'clock.

No. 16.

Dr. Rees purpoſes to commence his Third Courſe of Lectures on the *Venereal Diſeaſe*, and *Affections of the Urinary Organs*, at his houſe, No. 2, Soho Square, on Thurſday October 1, 1801.

For particulars inquire as above directed.

No. 17.

UNIVERSITY OF GLASGOW.

The Medical Lectures in this Univerſity will begin on Tueſday the 3d of November, at the following hours.

Dietetics, *Materia Medica*, and *Pharmacy*, by Dr. Millar, at ten o'clock forenoon.

Midwifery, by Mr. Towers, at eleven.

Theory and Practice of Phyſic, by Dr. Freer, at twelve.

Anatomy and *Surgery*, by Dr. Jeffray, at two o'clock afternoon.

Chemiſtry and *Chemical Pharmacy*, by Dr. Cleghorn, at ſeven.

Clinical Lectures on the caſes of patients in the Royal Infirmary, by Dr. Freer and Dr. Cleghorn.

The firſt lecture by Dr. Freer, on Thurſday the 12th of November, at ſix o'clock in the evening.

Dr. Brown will begin his Lectures on *Botany*, about the beginning of May next.

Correſpondence.

Dr. *G. Pearſon* handſomely diſclaims being the writer of the pamphlet on *Contagion*, erroneouſly aſcribed to him in our laſt number (p. 54). The error was typographical, Dr. *R.* Pearſon (of Birmingham) being the gentleman intended.

Our thanks are due to Dr. C. for his laſt favour.

We cannot comply with the requeſt of *Philo-veritas*. Strictures, however juſt, on a cotemporary journal would, in us, ſavour too much of illiberality.

No. XLV.

THE MEDICAL AND CHIRURGICAL REVIEW.

NOVEMBER, 1801.

Art. XXX. *Philoſophical Tranſactions of the Royal Society of London, for the Year* 1801. Part I.

(Continued from page 128.)

THE ſecond article is the Bakerian Lecture, on the Mechaniſm of the Eye: by Dr. *Thomas Young*. The ſubject of inquiry here, is, the means by which the eye accommodates itſelf to the perception of objects at different diſtances. This has been ſuppoſed by different philoſophers to be effected in very different ways. Mr. *Hunter*, many years ago, in inveſtigating this ſubject, diſcovered the cryſtalline humour of the eye to be laminated, and the laminæ to be compoſed of fibres: and his opinion was, though he was not able to demonſtrate it by experiment, that this ſtructure was muſcular, for the purpoſe of adjuſting the eye to different diſtances, by the contraction and relaxation of thoſe fibres. This opinion was afterwards adopted by Dr. *Young*, and ſeveral obſervations on the ſubject were made by him, and laid before the *Royal Society*, in the year 1793. After the death of Mr. *Hunter*,

the subject was prosecuted with much industry by Mr. *Home*, whose experiments, in which he was assisted by the late ingenious optician, Mr. *Ramsden*, led him to reject the idea of a muscular structure in the crystalline, and to attribute the adjustment of the organ to a change of figure in the cornea, which he discovered to be elastic. In consequence of this elasticity, when the four straight muscles of the ball of the eye act together, they compress the lateral and posterior parts of the eye, and thus force the aqueous humour forwards against the centre of the cornea, which is thus rendered more prominent or convex, and consequently better fitted for the perception of minute and near objects*. These experiments of Mr. *Home* appeared to Dr. *Young* perfectly conclusive; and he of course abandoned very readily his former opinion of the muscular structure of the lens. Some later observations, however, have led him to resume his former sentiments on the subject, as far at least as these attributed to the lens a power of changing its figure.

Some general remarks on the sense of vision precede; followed by a number of dioptrical propositions, which could not be made intelligible in an abridged state.

The faculty of accommodating the eye to various distances, appears to exist in very different degrees in different individuals. The shortest distance, the author observes, of perfect vision in his own eye, is 26 tenths of an inch for horizontal, and 29 for vertical rays. This power is equivalent to the addition of a lens of 4 inches focus. Dr. *Wollaston* can see at 7 inches, and with converging rays: the difference answering to 6 inches focal length. Mr. *Abernethy* has perfect

* Mr *Home* afterwards was induced to abandon in some measure this opinion, and to attribute one-third only of the adjustment to the change of curvature in the cornea, the remainder of the effect being supposed to depend partly on the elongation of the axis of vision, and partly on the motion of the crystalline lens.

See *Phil. Transf.* 1796. p. 2.

vision

viſion from 3 inches to 30, or a power equal to that of a lens $3\frac{1}{2}$ in focus. A young lady of the author's acquaintance can ſee at 2 inches and at 4; the difference being equivalent to 4 inches focus. A middle aged lady at 3 and at 4; the power of accommodation being only equal to the effect of a lens of 12 inches focus. In general it appears, that the faculty diminiſhes in ſome degree, as perſons advance in life; but ſome alſo of a middle age appear to poſſeſs it in a very ſmall degree.

The author next inquires, what changes in the form of the eye will be neceſſary to produce thoſe effects; whether we ſuppoſe the radius of the cornea to be diminiſhed, by its becoming more prominent; or the diſtance of the lens from the retina to be increaſed, or theſe two cauſes to act conjointly; or, laſtly, whether we ſuppoſe the figure of the lens itſelf to undergo a change of form.

Againſt the former ſuppoſition a number of arguments are adduced, which appear concluſive; and, indeed, Mr. *Home* and Mr. *Ramſden*, as obſerved above, on a repetition of their experiments, were led to queſtion the accuracy of their former ones, and to ſuppoſe that a change of the cornea produces only one-third of the effect. With reſpect to a change in the length of the axis of the eye, it appears, from the experiments related, to be highly improbable that ſuch a change ſhould take place in any material degree; and it is almoſt impoſſible to conceive by what power it could take place; the muſcles tending rather to ſhorten the axis of the eye by drawing it backwards into the orbit. The joint operation of the two cauſes mentioned is ſhewn to be equally improbable, though this ſuppoſition was the laſt reſult of Mr. *Home*'s and Mr. *Ramſden*'s inquiry.

The author now proceeds to inquire into the pretenſions of the cryſtalline lens to the power of altering the focal length of the eye. The grand objection, he obſerves, to the efficacy of a change of figure in the

 lens,

lens, was derived from the experiments in which thoſe who have been deprived of it have appeared to poſſeſs the faculty of accommodation. From the obvious advantage, however, patients in general find, after the extraction of the lens, in uſing two kinds of ſpectacles, it is reaſonable to conclude that there muſt be a deficiency of that faculty; and from a number of experiments made by the author on patients of this deſcription, he concludes, that, in an eye deprived of the cryſtalline lens, the actual focal diſtance is totally unchangeable. A change of figure in the lens itſelf readily explains the adjuſtment, whilſt the other ſuppoſitions are inadequate to account for it. Its laminated and fibrous ſtructure renders it probable, that a muſcular power accompanies it, capable of changing in a conſiderable degree its figure. Many diſtinguiſhed phyſiologiſts have maintained a ſimilar opinion, particularly *Camper* and *Albinus*; the latter of whom ſuggeſts the analogy of the lens to the muſcular parts of pellucid animals, in which even the beſt microſcopes can diſcover no fibres.

Art. 3. 'On the neceſſary Truth of certain Concluſions obtained by Means of Imaginary Quantities. By *Robert Woodhouſe*, M. A. &c.' The object of this paper is to vindicate the abſtract part of mathematics from the charge which has frequently been made againſt it, of being filled with jargon, abſurdity, and myſtery, and perplexed with paradox and contradiction; an object which the author has very ſatisfactorily attained.

Art. 4. 'On the Production of Artificial Cold by Means of Muriate of Lime: by Mr. *Richard Walker*.' M. *Lowitz*, profeſſor of chemiſtry in Peterſburgh, having found, by an experiment made in the winter of 1792, that cauſtic vegetable alkali, in a ſolid ſtate, produced a degree of cold far exceeding any other ſubſtance before mixed with ſnow, viz. 83 degrees, deter-

determined to proſecute the ſubject; and, upon reflection, conſidering that the deliqueſcent ſalts were likely to be the fitteſt for the purpoſe, fixed chiefly upon the claſs of muriatic ſalts, or thoſe which have their baſe neutralized by the muriatic acid. The reſult of his experiments was the diſcovery that cryſtallized muriate of lime ſunk the thermometer 82 degrees; and that the other neutral ſalts of this claſs, though much inferior to that ſalt, exhibited nevertheleſs remarkable powers of the ſame kind*.

From the account of Prof. *Lowitz*'s experiments here given, and which are confirmed in great meaſure by thoſe of the author, it appears, that, by this ſingle frigorific mixture, quickſilver may be frozen whenever the temperature of the materials at mixing is no colder than +32°; whereas the nitrous acid with ſnow, which has hitherto been conſidered as the moſt powerful of frigorific mixtures, requires a temperature of +7°, to produce the ſame effect.

Art. 5. 'Account of a monſtrous Lamb: by Mr. *Anthony Carliſle*.' The imperfection in this caſe was confined to the head of the animal, the reſt of the body having the natural ſtructure. The whole of the organs naturally found in the face were wanting, a ſmall round opening only, capable of receiving a bougie, forming the common paſſage to both the œſophagus and trachea. The whole cerebrum, and all its nerves, were deficient; whilſt the cerebellum was diſpoſed quite orderly, and its nerves nearly in the natural ſtate. The narration of theſe appearances, Mr. *Carliſle* obſerves, aſſiſts and confirms other facts, in demonſtrating, that the formation and growth of animals in the uterus are independent of any influence from thoſe parts of the brain which properly

* Profeſſor *Lowitz* no ſooner diſcovered the great efficacy of the muriate of lime for this purpoſe, than he gladly rejected the cauſtic vegetable alkali, on account of its burning quality; the difference being *one* degree only.

belong to fenfation. We have to regret, that the animal did not live to fhew the phenomena of volitions directed to its limbs, and other apparatus, without that intelligence from the organs of the fenfes which regulates and directs the efforts of perfect animals. The careful obfervance of fuch circumftances may, in future, bring us to difcoveries of the higheft value in that part of phyfiology which is now enveloped in deep myftery: the facts at prefent collected are not fufficient. The intellectual phenomena of perfons who fuftain known injuries of particular parts of the brain; the appearances on the diffections of ideots, with their mental particularities; the anatomical hiftory of maniacs, all promife, when properly cultivated, a feries of truths, which, it may not be extravagant to hope, will open fublime views into thofe receffes of our conftruction, which juftly rank among the moft curious, if not the moft important, objects of refearch.

Art. 6. 'An Anatomical Defcription of a Male Rhinoceros: by Mr. *H. Leigh Thomas,* furgeon.' This requires no particular notice here.

Art. 7. 'Demonftration of a Theorem, by which fuch Portions of the Solidity of a Sphere are affigned as admit an Algebraic Expreffion: by *R. Woodhoufe,* A. M.'

Art. 8. 'Account of the Difcovery of Silver in Herland Copper Mine: by the Reverend *Malachy Hitchens.*'

Art. 9. 'Account of an Elephant's Tufk, in which the iron head of a fpear was found imbedded: by Mr. *Charles Combe,* of Exeter College, Oxford.' It is no uncommon circumftance to meet with brafs, lead, and iron mufket-balls, in the fubftance of an elephant's tufk; and in thefe cafes, general appearance

ances ſeem to indicate, that they were projected through the ſides of the tuſk. In the preſent caſe, the ſurrounding ivory bore no marks of external injury, and the author ſuppoſes that the ſpear-head entered at the baſis of the trunk, where the tuſk is articulated with the upper maxillary bone.

Art. 10. 'Deſcription of the Arſeniates of Copper, and of Iron, from the County of Cornwall: by the Count *de Bournon.*'

Art. 11. 'Analyſis of the Arſeniates of Copper, and of Iron, deſcribed in the preceding paper; likewiſe an analyſis of the red octaedral copper ore of Cornwall, with remarks on ſome particular modes of analyſis: by *Richard Chenevix,* Eſq. M. R. I. A.' This paper beautifully ſerves to ſhew the intimate relation which cryſtallography, or the claſſification of mineral ſubſtances according to their external forms, has to their intimate, or chemical, nature and properties. When to the acknowledged accuracy of the chemical method of inveſtigation can be added a reliance on cryſtallography, or the external characters, each receives additional ſtrength and confirmation, and the two ſciences, ſo nearly allied, may derive new light from the reciprocal aid thus afforded.

The Meteorological Journal, as uſual, concludes the volume.

Art. XXXI. Samuelis Thomæ Soemmering *Tabula Baſeos Encephali.* Folio, 16 pages, 2 plates. Frankfort, 1799. Imported by T. Boosey, London, 1801. Price 10s. 6d.

We have more than once had occaſion to notice the deſcription of particular parts of the human body, by this diſtinguiſhed anatomiſt. The

 preſent

preſent work is no way inferior to the former ſpecimens by the ſame author, whether we regard the minuteneſs and accuracy of deſcription, or the beauty and elegance of the type and engravings. Uncommon pains are here taken to delineate the baſis of the brain, and the exact ſituation of the nerves, as they iſſue from this part. For this purpoſe, the author choſe the brain of a perfectly-formed boy of three years of age, and removed it with the utmoſt caution, without its having undergone any previous preparation, and before the leaſt ſign of putrefaction appeared. And, leſt any change ſhould have taken place in the relative ſituation of the parts, from the mere gravity of ſo tender a ſtructure, an impreſſion of the internal baſis of the cranium was taken in plaiſter of Paris, for the purpoſe of correcting any errors of the kind mentioned.

M. *Soemmering*, however, has not merely confined himſelf to an anatomical delineation of the baſis of the brain, but endeavours from it to illuſtrate different important phyſiological points. From an inſpection of this part in the human ſubject, and a compariſon with the ſame part in the brute, a reaſon, he thinks, may be deduced, why man ſo greatly excels other animals in the faculties of the mind. Thus, if we compare the brain of any animal with that of the human, as here delineated, we ſhall find the latter greatly exceeding in ſize, *in reſpect to the nerves ariſing from it*, that of other animals. Examine, for inſtance, the brain of an ox, and you will find not only the olfactory nerve, but even one of the fifth pair, to exceed in magnitude the whole twelve pairs in the human ſubject; whilſt in that diminutive animal, the mole, the olfactory nerve equals in ſize that of man.

An opinion has prevailed, from the time of Ariſtotle, that man poſſeſſed the largeſt brain, in reſpect to the bulk of the whole body, of any animal; ſo that the weight and bulk of the brain being compared with the

the weight and dimenſions of the reſt of the body, in no animal was it ſuppoſed to be equally large as in man. On examining, however, the various tribes, modern anatomiſts diſcovered ſeveral exceptions to this rule; ſome of the ſmaller ſpecies of apes, and even mice and birds, being found to exceed man in this reſpect. In the mole, for example, the proportion the brain bears to the reſt of the body is as 1 to 36; and in the Canary bird, it makes no leſs than $\frac{1}{14}$ of the whole animal. In the *ſajou*, Haller found the brain to equal in weight $\frac{1}{11}$ of the whole body; and the author obſerved it to reach even an eighth in the foetus of the *ſimia cynamolgus*.

It is, however, difficult to eſtimate, with accuracy, the proportion which the brain bears to the reſt of the ſyſtem, ſince much depends on the point at which the nerves and medulla ſpinalis are divided. Hence it is, that ſome have calculated the brain of a dog at $\frac{1}{354}$, others ſo high as $\frac{1}{50}$ of the whole body. The proportion varies, alſo, exceedingly, according as the ſubject is fat or lean. Thus if the brain be three pounds weight, in a lean perſon, weighing altogether 150 pounds, the proportion will be $\frac{1}{50}$ of the whole; whilſt in the ſame perſon, in a corpulent ſtate, and whoſe weight may be increaſed by fat to 6 or 800 pounds, the proportion will be only $\frac{1}{200}$ or $\frac{1}{266}$ of the whole. For the weight of the brain in health conſtantly remains the ſame; neither increaſing with corpulency, nor diminiſhing with general emaciation of the ſyſtem.

The brain of man, therefore, exceeds that of all other animals in ſize, *in reſpect of the nerves ariſing from it*, and not abſolutely in compariſon with the whole body, as formerly held.

2. Beſides the difference which exiſts between man and the brute creation, in reſpect to the general magnitude of this organ, other differences exiſt in the formation and ſize of particular parts. Thus, in the firſt

firſt place, the brain in man is larger, in proportion to the cerebellum, than in brutes. 2. It is alſo larger in reſpect to the medulla ſpinalis; or, which comes to the ſame thing, the medulla ſpinalis is larger in animals than in man. In fiſhes, this part is ſo large, that the brain appears only as an appendix to the medulla ſpinalis. 3. The form of the convolutions of the brain, and ſtill more that of the cerebellum, in animals, differs from the human. Yet the form of theſe parts is ſtrikingly the ſame in all the individuals of the ſame ſpecies. 4. The whitiſh eminence in fiſhes is conſtantly large and double in its form; whilſt in dogs, cats, and many others, the ſame part is ſmall and double; in ſheep, oxen, &c. it is large, but ſingle only; whilſt in the camel it is almoſt wanting. 5. In apes, the medulla ſpinalis is ſcarcely diſtinguiſhable from the *pons varolii.*

But not only is there a difference in the form and ſtructure of the brain in the mammalia, birds, and fiſhes, but in each genus of the claſs, likewiſe, a peculiar diſpoſition obtains in this reſpect; for the fabric of the brain of a bird not only differs widely from that of quadrupeds, but that of the horſe differs from the bullock, and the latter from the ſtag. On the other hand, the encephalon of the horſe tribe agrees exactly in the different ſpecies. Thus, for inſtance, in phytivorous animals, the anterior of the *corpora quadrigemina,* in the carnivorous the poſterior, are found the largeſt. In man, therefore, the ſtructure of the brain differs from that of animals.

The third point which the *table* illuſtrates, reſpects the ſize and properties of the brain in childhood. We find, for inſtance, from the annexed figure, that this organ in a child, only three years of age, has attained the ſame degree of magnitude, nearly, as in the adult; and it even exceeds that of ſome adults of ordinary ſtature. But it ought not to ſurprize us, the author obſerves, that the brain ſhould have reached this perfection

fection fo early as the third year; fince we obferve its various actions at this age fo perfectly performed, that, if the expreffion be allowed, children differ from adults rather in the *quantity* than in the *quality* of their ideas.

In fome refpects, however, a difference is obfervable in the brain of a child of the age mentioned, and that of an adult. The whole fubftance is fofter and more fucculent, whilft the membranes which furround it are thinner and more vafcular. The cineritious fubftance is rather darker coloured; the medullary whiter and more moift. The form of the convolutions is more rounded, and the cohefion of the laminæ of the cerebellum flighter. The cerebellum, in refpect of the cerebrum, appears fomewhat larger, whilft the medulla fpinalis is fmaller than in the adult. The minuter parts of the cerebrum and cerebellum which lie contiguous cohere more flightly, whilft thofe which are continuous are lefs denfe. The nerves themfelves are in general more flender, rounded, foft, moift, and more diftinctly fibrous, in their appearance. The olfactory nerves are fhorter, but at the fame time much thicker: the optic, fofter and rather lefs in fize: the third and fourth pairs, fmaller and rounder: the fifth, more flender and fibrous: the facial nerves, much flenderer: the auditory nerve alone, in form and fize, nearly refembles that of the adult, except perhaps that it is rather more foft and moift.

The fourth point eftablifhed by the *tables* here exhibited, relates to the conical form of the nerves themfelves. On the moft careful and accurate diffection, the author always found, that the more remote from the brain, the larger the nerves appeared. The nervous cords not being, as commonly imagined, cylindrical, but conical; the apex of the cone being fituated towards the brain, the bafis towards the furface or extreme parts of the body, whether going to the fkin, the organs of fenfe, the mufcles, or the bloodveffels.

vessels. This is particularly observable in the olfactory, the 5th pair, and especially in the auditory nerves. Indeed, without a provision of this kind, it is difficult to conceive how the different parts could be supplied with nervous filaments.

The optic nerve appears, of all, the largest in size; the rest follow in this order: the fifth pair, the olfactory, auditory, vocal, hypoglossal, facial, sixth, glosso-pharyngeal, and the fourth, which is usually the smallest. It appears, therefore, that the nerves follow the size of the parts to which they belong. The auditory nerve alone, on account of the labyrinth being perfect at birth, appears to have attained at that period its greatest magnitude. In like manner, the optic nerve, like the bulb of the eye to which it is destined, is nearly perfect at birth. The other nerves are much smaller than in the adult, especially the facial and fifth pair, in proportion to the parts to which they belong.

ART. XXXII. *Dissertations on Inflammation.* *By* JOHN BURNS, *Surgeon in Glasgow.* 2 vols. 8vo. 970 pages, price 14s. Glasgow, 1801. London, LONGMAN and REES.

IN our last volume * we felt it incumbent on us to speak in terms of commendation of Mr. Burns's *Essay on the Gravid Uterus*, a subject of which he seems to have had much experience, and which he has evidently studied with great advantage. In the present work he has entered a much wider field, his subject leading him to discuss the most important laws of the animal œconomy, as well as those which relate to inflammation simply. We cannot, however, congratulate him on the success of his inquiries on this, as on the former object of his labours.

* Page 152.

He

He has, we fear, undertaken a taſk beyond his powers; forgetting the good old maxim of *quid valeant humeri*, &c.

The Diſſertations here given are part of a courſe of lectures on ſurgery, which the author read three years ago in the Royal Infirmary in Glaſgow. They are preceded by ſome preliminary remarks on the living principle and its laws of action. Some novelty of doctrine will be found here, not perhaps altogether incontrovertible; and an affected uſe of new terms, adopted, it would ſeem, on ſlight and inſufficient grounds.

The author ſets out with obſerving, that the whole of Nature's products, animal, vegetable, and *mineral*, is animated by a living principle; there being, in reality, according to his notion, no individual whatever in any of the kingdoms or claſſes of Nature which can be called inert, or truly dead: for, from the largeſt maſſes of matter down to the moſt minute corpuſcles, we diſtinctly perceive, he avers, the operation of an active and immaterial principle. This it is, which, in the mineral claſs of bodies, cauſes the influence of gravitation, corpuſcular attraction, and chemical affinity; in the vegetable, growth, irritability, and the power of reproduction; and in the animal world, ſtill other faculties and powers, in addition to thoſe already mentioned as belonging to the inferior claſſes of Nature. The author, however, does not take upon him to determine, whether it is the ſame principle in different degrees of perfection that exiſts in theſe different caſes, or whether its nature be eſſentially different in each.

'Life,' it is obſerved, 'is a principle which we can only detect and judge of by its operations or actions; and, when theſe are not exhibited, we are apt, though ſometimes erroneouſly, to conclude, that the body is dead. The leading property of life is, to communicate a preſervative power to every individual with which it is connected. This is ſometimes effected

fected by very evident and intricate actions; but at other times is exerted without any sensible operation. The crystal resists, to a certain degree, mechanical impressions, which would destroy its form. The blood when newly drawn, the sap of vegetables, the living egg, resist cold, by an imperceptible operation, to a much greater degree, when alive, than after their peculiar life departs. They resist all the efforts of chemical agents which act on common matter; nor is it possible to decompose or injure them in this way, until they lose their specific life, and descend in the scale of existence. This simple preservative power is a discriminating mark of the presence of life; but we cannot detect it until we apply destroying causes: it is the uniform and universal effect of the combination of life with any substance, whatever its nature or structure may be: it is the essential characteristic of life, which it must shew whenever it is present. But when we find vital power united with a certain organization, then more varied phenomena take place; and these are called actions of the vital principle.' 'In the two first classes, the enlivening principle seems to be equally united with and dependent on every part; but, in animals, the principle which performs these actions is more directly connected with certain organized portions of the body, called brain and nerves, which supply every part, though so minutely that we often cannot trace their course.'—The brain and nerves, therefore, form the next object of the author's consideration.

The vital energy or principle he supposes to be derived from a twofold source, the food taken in, and the oxygen respired. The vitality yielded by the former (all matter, as before suggested, being supposed to possess a living principle) is considered as more permanent, and united with the structure of the body, as the deposition of new matter from the blood takes place. The vitality furnished by the air seems to be yielded to the nerves, during the course of circulation

for

for the immediate performance of the actions of the fyftem.—The author here enters a wide field of hypothefis and conjecture, in which we fhall decline following him.

Sympathy is divided, by the author, into two fpecies, which are termed the *fympathy of equilibrium*, and the *fympathy of affociation*; in the former, the increafed action of one part is accompanied by a diminution of that of fome other. Thus, when the action of the inteftines is increafed, as in diarrhœa, the action of the ftomach is diminifhed, and naufea and indigeftion take place. The *fympathy of affociation* is, when two parts act together at the fame time; as the glans and tefticles in coition. This diftinction, it may be obferved, is not very important, as many of the organs exhibit at different times both the fpecies of fympathy here noticed. The final caufe of the fympathy of equilibrium is ftated to be, the prefervation of the balance of the fyftem, and of its energy: for, if a large part of the fyftem were to have its action much increafed, and all the other parts to continue acting in the fame degree as formerly, the whole muft be foon exhaufted, increafed action requiring for its fupport an increafed quantity of energy.

Inftead of the ordinary mode of claffing difeafes, the author adopts one that will probably be deemed not a little whimfical. He would eftablifh fix *claffes* of difeafes, under the following denominations: *naturales*, *tranfpofitæ*, *fimiles*, *diffimiles*, *mixtæ*, and *mentales*.

The firft clafs, *naturales*, is thus characterized: 'alterations in the performance of the natural action of a part of the body, or of the whole fyftem, but not to fuch a degree as materially to change its nature, or render it new.' This clafs is divided into three *orders*: *imperfectæ*, *accrefcentes*, and *inequales*.

The *imperfectæ* confift in a diminution, interruption, or irregularity of the performance of fome part, or

or the whole, of the natural action: as instances are mentioned, spasm, epilepsy, palpitation, asthma, dyspepsia, cholic, chlorosis, torpor from cold, &c.

The second *order* of *accrescentes:* 'some part of the natural action morbidly increased, without being materially changed in its nature;' as cholera, diarrhœa, menorrhagia.

The *inequales* are characterized by a loss of balance betwixt some part of the natural action; as in dropsy, where the secretion and absorption do not balance each other.

Of this mode of classification it is sufficient to observe, that almost any one of the species might be ranked, without inconsistency, under any of the classes, so comprehensive are the characters assumed; whilst, on the other hand, diseases are brought together in this system from the remotest part of Nature. Thus, under the class *dissimiles,* which are defined, 'actions very dissimilar to the natural action, and which may be called specific,' are included *intermittentes, typhoides,* and *venenosæ*—that is, actions excited by poisons.—The *narcoticæ,* or actions produced by narcotic substances, might rank, one would suppose, with the last mentioned: here, however, they constitute an *order* of the fifth class, the *mixtæ,* and are joined by the other orders of that class, viz. *erupturæ, immundæ, glandulares, ulcerantes, connatæ, diminutæ, adauctæ,* and *irritatæ.*—We need not, surely, be more particular on this head.

After examining, at considerable length, the different pathological systems which have obtained at different periods, the author gives what he calls a short *summary of the laws of action,* in which his peculiar notions, in both pathology and therapeutics, are contained. This summary, however, as he terms it, is not remarkable for its brevity, as it consists of twenty-six different articles, and occupies very nearly fifty pages of the volume. We shall pass over this, in order

order to reach the professed object of the work, viz. *Inflammation*, its doctrine and treatment.

The author's division of inflammation is somewhat peculiar. The most obvious division, he observes, of inflammation, is into that affecting strong and healthy parts, and that affecting those which are weak. (The *inflammatæ*, we should observe, constitutes the first *order* of the class *similes*, which are defined, ' actions that bear a resemblance to the natural action, which is increased to such a degree, as to become changed in its nature'). Inflammations, therefore, consist of two genera, the *inflammatio valida*, and the *inflammatio debilis*. The *specific* distinctions are founded on the part affected; whilst the *varieties* depend on the activity and duration of the action; thus we have the *inflammatio activa, sive acuta*, and the *inflammatio passiva, sive assuefacta*.

With respect to the proximate cause of inflammation, the author admits none of the theories usually entertained on the subject, but considers the affection as a new and distinct action of the living system. The redness of inflamed parts he attributes to the presence of a greater quantity of blood than usual: and this augmentation he supposes to be produced both by the vessels, which formerly conveyed the blood, being more distended, and also by the enlargement of the small vessels which formerly contained only lymph, but now receive red blood. Added to this, the arterial blood is not so thoroughly converted into venous, as in health. The muscular power of the artery, which some have considered as diminished in inflammation, is supposed by Mr. Burns to be increased, the contractions being more forcible, and the dilatation proportioned to the contraction. In no other way, he thinks, can the increased circulation in inflamed parts be accounted for. The *swelling* depends, first, upon the presence of a greater quantity of blood than usual; secondly, upon the increase and change of the interstitial fluid; and, thirdly upon the deposition

 of

of more organic particles, in an imperfect state. *Pain* in inflammation is referred to a peculiar condition of the nerves, or their state of acting, every new or imperfect action being supposed productive of sensation in the mind. The production of *heat* the author considers as the effect of secretion, the generation of this principle in an animal being as much a secretory process, as the formation of bile or gastric juice, there being only this difference betwixt them, that, in the one case, a substance is separated from the blood, which formerly existed perfectly in it, and which exists in perfection in every piece of matter; whilst, in the other, the living power produces a new combination, and different arrangement of the principles of the blood, forming a substance which neither existed in it, nor elsewhere. In inflammation, the heat produced depends on the degree of action in the part affected. We may hence understand, how, in approaching mortification, the heat is little, because in this case the action is low. We can also see why the *inflammatio assuefacta*, or what has been called passive inflammation, should produce much less heat than the *inflammatio valida*, because the action rises little beyond the natural one, in degree.—Lastly, the fever, or constitutional affection, in inflammation is referred to sympathy as its cause.

On the treatment of simple inflammation and its consequences, the author speaks fully, but his remarks have not sufficient novelty to require particular notice here. In the third Dissertation *specific* inflammations are considered. In this case some peculiar modification of the inflammatory action takes place, or rather the action possesses some peculiar or specific qualities, independent of the simple condition of inflammation. *Specific* inflammations, the author observes, are characterized by peculiar appearances, which in each one are different. It is, however, he remarks, often extremely difficult to distinguish between these. In ulcers,

ulcers, besides the appearance of the sore, specific action likewise produces a perceptible effect upon the scab which covers them, or the cicatrix which is formed. Thus, scrophula is marked by a particular appearance of the cicatrix, or of the scab. The venereal ulcer has likewise a particular scab, and many cutaneous ulcers are best distinguished by the scab. Other actions produce no considerable ulceration, but only successive desquamation of the cuticle. We may also sometimes discover specific action by the sensation of which it is productive. Thus, for instance, cancer produces a burning kind of pain, which never attends simple ulceration.

Amongst specific ulcers *phagedena* is first noticed, and is defined a suppurating sore dependent upon the application of contagion. The *cynanche maligna*, and the different varieties of herpes, are referred to the same class of specific actions, but are very briefly spoken of.

The fourth Dissertation treats of what the author terms the *spongoid inflammation*. By this name is understood a disease that has been in general considered as of a cancerous nature by writers; it is thus described: ‘ This disease begins with a small colourless tumour, which, if there be no thick covering over it, such as the fascia of a muscle, or the aponeurosis of the foot, is soft and elastic, but tense if otherwise. It is at first free from uneasiness, but by degrees a sharp acute pain darts occasionally through it, more and more frequently, until the sensation becomes continued. For a considerable time, the tumour is smooth and even, but afterwards it projects irregularly in one or more points, and the skin at this place becomes of a livid red colour, and feels thinner. It here readily yields to pressure, but instantly bounds up again. Small openings now form in these projections, through which is discharged a thin bloody matter. Almost immediately after these tumours burst, a small fungus protrudes, like a papilla, and this rapidly increases,

 both

both in breadth and height, and has exactly the appearance of a carcinomatous fungus, and frequently bleeds profusely. The matter is thin and exceedingly fetid, and the pain becomes of the smarting kind. The integuments, for a little around these ulcers, are red and tender. After ulceration takes place, the neighbouring glands swell, and assume exactly the spongy qualities of the primary tumour. If the patient still survive the disease in its present advanced progress, similar tumours form in other parts of the body, and the patient dies hectic.

'On examining the affected parts after death or amputation, the tumour itself is found to consist of a soft substance, somewhat like the brain, of a grayish colour, and greasy appearance, with thin membranous-looking divisions running through it, and cells, or abscesses, in different places, containing a thin bloody matter, occasionally in very considerable quantity. There does not seem uniformly to be any cyst surrounding the tumour, for it very frequently dives down betwixt the muscles, or down to the bone, to which it often appears to adhere. The neighbouring muscles are of a pale colour, and lose their fibrous appearance, becoming more like liver than muscle. The bones are uniformly caries [carious], when in the vicinity of these tumours. If large, they are found rough, and broken off into fragments; if small, they are generally soft and porous. This tumour is sometimes caused by external violence; but often it appears without any evident cause.' Respecting the cure of this formidable disease, the author gives us no hopes but from amputation, and that only when early performed.

The next Dissertation treats of the scrophulous inflammation. On this subject we find little that is new or important. Scrophula does not seem to be here admitted amongst specific actions, but as a peculiar state of constitution, that influences materially all other

other diseased actions occurring at the time. The author observes, though we know not on what authority, that typhus fever is, cæteris paribus, more violent in scrophulous habits than in others; and that this constitution is less susceptible of the mercurial action. The formation of the scrophulous habit is thus endeavoured to be explained. ‘ Scrophulous people, the author observes, ‘possess a peculiar constitution, and may therefore be said to constitute, in one respect, a distinct variety of the human race. This state is produced by a peculiar condition of the semen (owing to the peculiarity of the system which forms it), or of the female organs of generation, which possess the same general nature with the body of which they form a part. When the organs of generation in both sexes are healthy, that is to say, similar in nature to what may be considered as the proper nature of the human race, taken as a distinct class of animals, then the semen stimulates the ovarium to the formation of a healthy child, or one which possesses a constitution, or susceptibility of performing, and having actions induced in it similar to that of the majority of mankind. In this process, the ovarium is to be considered as a gland, and the semen as its peculiar stimulus. If, however, either the nature of the gland, or of its stimulus, be changed, it is evident that the action induced must be more or less modified, and the secretion or product changed to a greater or less degree in its nature and properties. Were it possible for a progeny to be produced between the human and the brute creation, they would possess a nature different from both, or perform actions of a mixed kind. This may be observed with regard to mules amongst brutes. In the same way, a healthy and scrophulous person must produce a child which differs from a healthy one, in having a certain peculiarity of constitution.’

In the treatment of the disease, the chief stress is laid on the avoiding of the exciting causes of inflam-

mation. When it does take place, an invigorating plan is recommended, which, whilst it is most useful as a prophylactic, is at the same time the best method of cure. The muriated barytes, muriate of lime, iron, burnt sponge, cicuta, mercury, and others, which have been recommended at different times, are entitled to no confidence. The nitrous acid, the author thinks, may occasionally be useful.

The last Dissertation treats of cancerous inflammation. Respecting the proximate cause of this affection the author notices the various opinions which have been held on the subject, from the most remote times to the present. 'Some surgeons,' he observes, 'perhaps from a desire of singularity, or from a defect of their organs of sight, declared that they had detected little worms in the part, which, eating it up, produced all the disagreeable symptoms of cancer, and to their introduction the disease was owing. The cure which they confidently proposed, was applying a piece of cold veal to the part, which would tempt the animals to quit their devastation. Others, perhaps originally from ridicule, though latterly in sober earnest, told their readers that there were no worms, but a little wolf in the part, which might be made occasionally to shew its head, by holding a piece of meat before the ulcer.

'Strange as this doctrine of living creatures producing cancer may appear, it is nevertheless adopted by a late very ingenious writer. When hydatids find their way into "a solid substance," the consequence, in his opinion, will be cancer; and the success of an operation will, he conjectures, depend, in a great measure, upon these animals being confined in a common cyst, for then they may be all removed; whereas, if they be unconnected, some of the smaller ones may be allowed to remain *.'

* *See* Adams's *Observations on Morbid Poisons.* We shall shortly have occasion to resume the consideration of this subject.

On

On this hypothesis Mr. Burns observes: 'that hydatids *may* be formed on a cancerous gland, I shall not dispute; but that they are generally to be met with, or are in any respect essential to the disease, I cannot admit. In all the cancerous breasts, testicles, and tumours, which I have examined, I never saw any thing which could be considered distinctly as a hydatid; so that I suspect, that under this name have been described the small cancerous abscesses, with thick cartilaginous sides, which we so universally meet with in schirro-cancerous glands. We likewise find cancer take place in circumstances in which no hydatids can be found. Thus, for instance, a cancerous wart being knocked off the face, a cancerous ulcer is produced: but no hydatid is to be found at the basis of the wart to produce this.'

Several judicious remarks occur on the remedies which have at different times been employed in the treatment of cancer. The author neither admits their efficacy, nor does he add to their number a remedy of his own discovery. The cure of this dreadful malady, indeed, is still as hopeless as ever.

In addition to the two which have now been noticed, we are promised a third volume, in which *venereal inflammation* will come to be considered.

Art. XXXIII. *Oratio in Theatro Collegii Regalis Medicorum Londinensis, ex* Harveii *Instituto, habita die Octob.* 18, *An.* 1800. *Ab* Henrico Vaughan, *M. D. Medico Regio Extraordinario.* 4to. 18 pages, price 2s. 6d. London, 1801. White.

THE intent and object of the *Harveian* oration are too well known to require particular notice here. To pay a due tribute of applause to departed genius, is an office no less gratifying in itself, than it may be

 useful,

ufeful, by the incitement it holds out to induftry and exertion in the living. In the oration before us, after the cuftomary eulogy on the founders and benefactors of the college, the author inculcates the importance, and even neceffity, of combining the purfuit of general literature with the proper ftudies of the phyfician; endeavouring to fhew, from the example of thofe who have moft diftinguifhed themfelves in the profeffion of phyfic, the intimate connexion that fubfifts between them. Qualifications, however, of the kind here juftly infifted on, are not, we would hope, confined exclufively within the college walls; nor is it juft to ftigmatize, as is too generally done on thefe occafions, the *excluded* members of the faculty, as deficient in point of liberal fcience, or whatever conftitutes the honour and dignity of the art. Invidious motives, there is reafon to fear, have fometimes operated in thofe cafes. What but profeffional jealoufy could dictate fuch fentiments as are contained in the following paffage? "Populare arbitrium in famam et fortunas me-
" dicorum dominatum effe, et favorem publicum in-
" dignis non raro contigiffe jam olim queftus eft *Hip-*
" *pocrates;* eidem artis conditioni apud fuos indoluit
" *Galenus.* Profectò, focii ornatiffimi, fi ifti patres
" medicinæ in vivis forent, hæc noftra tempora ab
" antiquis non prorfus difcrepare agnofcerent ultrò et
" teftarentur—neque enim quemquam veftrûm latet
" *homunciones quofdam* nec doctos nec eductos li-
" bère, etiam illotis manibus, medicinæ altaria tan-
" gere aufos effe, et ftupore vulgi factos nobiles, rapido
" curfu perveniffe ad gratiam, ad famam, ad ampli-
" tudinem. Ità inaufpicatò fit, ut ingenio rite nu-
" trito, multiplici rerum cognitione, probitate, et
" modeftiâ priorem aliquando fedem teneant frons
" perfricta, fedulitas, obfequium, affentatio."—The allufion here is too perfonal and pointed to be miftaken, or juftified on the fcore of liberality. Foreigners will as little thank the author for his remark on medical practice abroad, which, he obferves, "apud ex-

"teros

" teros vix homine liberali digna habetur." General inſinuations of this ſort are both unjuſt and illiberal. A long liſt of foreigners might eaſily be made out, who, as well by their general knowledge as profeſſional ſkill, have acquired the eſteem of the moſt enlightened princes, and been deſervedly rewarded with the higheſt honours of the ſtate.

ART. XXXIV. *A Treatiſe on Febrile Diſeaſes, including Intermitting, Remitting, and Continued Fevers; Eruptive Fevers; Inflammations; Hemorrhagies; and the Profluvia, &c. By* A. PHILIPS WILSON, *M.D. F.R.S. Edinburgh, &c.* Volume III. 8vo. 538 pages, price . London, 1801. CADELL and DAVIES.

FEBRILE diſeaſes, we have ſeen, are divided by Dr. *Wilſon* into two claſſes, under the titles of *febres idiopathicæ and febres ſymptomaticæ.* The former have been already treated of. Symptomatic fevers, which are here conſidered, were defined, 'a primary local affection, with increaſed temperature, and a frequent pulſe.' Before entering, however, on this claſs of diſeaſes, the author thinks it neceſſary to make ſome obſervations on the local affections which attend them. Of theſe, inflammation is by far the moſt important, and is here treated of at conſiderable length

Simple inflammation is unattended by fever, and is thus diſtinguiſhed from the *phlegmaſiæ*, which are inflammations accompanied by fever. Inflammations properly ſo called, the author divides into two ſpecies, which he terms puſtule, and erythema, anſwering nearly to the ordinary diviſion into phlegmonous and eryſipelatous inflammation: for the reaſons which have determined him to reject the latter diviſion, we muſt refer to the work itſelf.

After

After aſſigning the *remote* cauſes of inflammation, Dr. Wilſon enters on the conſideration of the *proximate,* a ſubject that has called forth more active diſcuſſion, and given riſe to a greater variety of opinion, than probably any one connected with the ſcience of medicine. Inflammation, indeed, as is juſtly obſerved, forms the principal part of ſo many diſeaſes, that to determine its nature is an object of the very firſt importance.

The author begins by remarking, as he had before done, when ſpeaking of the modus operandi of emetics, that ſuch is the conſtitution of the animal body, that whatever injures it excites motions calculated to correct or expel the offending cauſe. This appears in the operation of emetics, cathartics, &c. in which we can readily find out the motions excited, and the manner in which they act, but cannot trace the manner in which the offending cauſe excites theſe motions. Inflammation, the author thinks, like vomiting and coughing, is an effort of the ſyſtem to remove an offending cauſe: and if we can trace every ſtep of this operation, with the exception of the changes induced on the nervous ſyſtem, we underſtand the nature of inflammation as completely as that of any function of the body. Previouſly, however, to entering on this part of the ſubject, the author examines the opinions which have generally prevailed reſpecting the nature of inflammation, and which are reducible to the four following: 1. That which ſuppoſes a morbid lentor of the blood clogging the minute veſſels: 2. That which ſuppoſes what has been termed error loci, the groſſer parts of the blood getting into veſſels too ſmall to tranſmit them: 3. That which ſuppoſes a ſpaſm of the extreme veſſels: and laſtly, That which attributes inflammation to a morbidly increaſed action of the veſſels of the part. Of theſe, the three former are ſo generally exploded, that we need not detain ourſelves with the arguments adduced againſt them. The latter opinion, which now obtains pretty univerſally, is

conſidered

conſidered by the author as equally unfounded. On this head, therefore, we ſhall follow him with ſome minuteneſs.

The opinion that inflammation depends on a morbidly increaſed action of veſſels, was an inference, the author thinks, from the miſtaken opinions which prevailed reſpecting the cauſe of animal temperature. When phyſicians believed the temperature of the animal body to depend on the friction of the blood againſt the ſides of its veſſels, it was a natural inference, that, when the temperature of any part was increaſed above the uſual degree, the motion of the blood in that part, the only acknowledged cauſe of animal temperature, was increaſed in the ſame proportion. But the velocity of the blood cannot, it is evident, be partially increaſed, except by an increaſed action of the veſſels of the part. It required no nice experiments, however, to diſcover, that the circulation is as rapid in many of the cold, as in ſome of the warm-blooded animals, and conſequently that the received doctrine of animal temperature was erroneous.

'With this doctrine, the hypotheſis which was founded on it ſhould have been abandoned. But, admitting that animal temperature depends on the motion of the blood, does the blood move with increaſed velocity in an inflamed part? Whether it does or not, the ſupporters of the hypotheſis before us have not thought it worth while to inquire. What if the blood is found to move more ſlowly in an inflamed than in a ſound part?'

'It will hardly be believed, that the increaſed redneſs of the part has been adduced as an argument in favour of the ſame hypotheſis; for, admitting that the increaſed redneſs, which can only depend on an increaſed quantity of blood in the veſſels (for all admit that in inflammation there is not neceſſarily any extravaſation of red blood); admitting, I ſay, that the increaſed redneſs depends on an increaſed action of the veſſels, it would baffle the moſt acute to ſhew how it could

could poſſibly be; how a more vigorous contraction of the veſſels can enable them to receive a greater quantity of blood.

‘ I need hardly remind the reader of what is generally admitted reſpecting the ſtructure of the blood-veſſels, and the manner in which they aſſiſt the heart in ſupporting the circulation.

‘ Every ſyſtole of the heart diſtends thoſe arteries into which it immediately propels the blood. But the artery is furniſhed with an elaſtic coat, which reſiſts this preſſure, and which, immediately after the influence which diſtends it ceaſes, begins to reſume its former dimenſions, contracting the diameter of the artery, and thus preſſing the blood on in that direction where the leaſt obſtacle is oppoſed to its paſſage, that is, forwards, the valvular ſtructure of the arteries, where they leave the heart preventing its return to this organ.

‘ But we are acquainted with no body ſo perfectly elaſtic as to return to its former dimenſions with a force equal to that which compreſſed or diſtended it. If, then, there be no power inherent in the arteries by which the blood may be propelled, but a degree of elaſticity, the impetus given by the heart muſt not only be ſufficient to overcome friction and other cauſes impeding the circulation in every part of the body, but alſo to admit of conſiderable diminution from the loſs it ſuffers in diſtending the blood-veſſels.

‘ It would be improper here to enter on the various arguments which render the opinion of the circulation depending on the action of the heart alone inadmiſſible; nor is it neceſſary, ſince this opinion, I believe, is univerſally abandoned. The veſſels, then, are endowed with a power different from mere elaſticity, and there are a ſufficient number of obſervations to leave no room to doubt, that this power differs only in degree from that of the heart, that is, is a muſcular power.

‘ Such

‘ Such are the powers of the blood-veſſels; let us conſider how an increaſed exertion of theſe powers, what has been called a morbidly increaſed action of the veſſels, in any part, can there occaſion a morbid accumulation of blood.

‘ When we ſpeak of a morbidly increaſed action of veſſels, do we allude to the ſtate of their muſcular coat? If the muſcular fibres of the blood-veſſels run tranſverſely *, what muſt be the effect of unuſual contraction? An unuſual diminution of their area. Do we mean by morbidly increaſed action, an increaſe of elaſticity; the conſequence of this can only be a greater tendency in the veſſel to preſerve its mean area.

‘ After each contraction of the muſcular coat, the elaſtic acts as its antagoniſt till the veſſel arrives at the mean degree of dilatation; but after this there is no farther power of diſtention inherent in the veſſel. The action of the elaſtic coat ceaſes, and it is needleſs to obſerve, that a muſcular fibre has no power to diſtend itſelf.

‘ The only power by which the veſſel can be farther diſtended is the vis a tergo; after the veſſel arrives at its mean degree of dilatation, both the elaſtic and muſcular coats act as antagoniſts to the vis a tergo †, to the force propelling the blood into, and thus tending farther to dilate, the veſſel. If, then, the vis a tergo becomes greater than in health, the powers of reſiſtance inherent in the veſſels remaining the ſame, or if the latter be weakened, the vis a tergo remaining the ſame, the veſſel muſt ſuffer a morbid degree of dilatation. There appear to be no other circumſtances under which a veſſel can ſuffer ſuch dilatation.

* ‘ See the obſervations and experiments of Haller and others.

† ‘ The more vigorous the muſcular coat, the more readily it is thrown into action by the diſtending power, and the more powerfully it acts.’

‘ The

'The oppoſite of this ſtate is, when the powers of the veſſels remaining the ſame, the vis a tergo is diminiſhed; or the vis a tergo remaining the ſame, the power of the veſſels is increaſed, and this oppoſite condition produces an oppoſite ſtate of the veſſels, a preternatural diminution of their area.

'In the one caſe, the diſtending bears too great a proportion to the reſiſting force; and preternatural diſtention is the conſequence. In the other, the reſiſting bears too great a proportion to the diſtending force; and preternatural contraction is the conſequence.

'But it is ſaid that an increaſe of the reſiſting force, that is, an increaſed action of the veſſels in any part, occaſions increaſed redneſs. Increaſed redneſs can only be the effect of an increaſed quantity of blood in the part. That the quantity of blood in any part may be increaſed, either the area of its veſſels muſt be increaſed, or blood muſt be extravaſated.

The opinion reſpecting the proximate cauſe of inflammation here ſupported is, that the capillary arteries are in a ſtate of debility, the larger in that of increaſed excitement. The difference between what is called active and paſſive inflammation depends on the degree in which the larger arteries are excited; and, we have reaſon to believe, the author obſerves, that in the cure of inflammation by reſolution, in proportion as the debilitated capillaries are excited to action, the action of the larger arteries abates, and the inflammation is cured as ſoon as the proper equilibrium is reſtored between the larger arteries and the capillaries, although the veſſels of the part are upon the whole in a ſtate of greater debility than previous to the attack of the diſeaſe.

And that ſuch is the caſe will appear probable, he thinks, among a variety of more direct obſervations, from this conſideration alone, that when the inflammation is of ſuch importance and extent that the increaſed action of the larger veſſels extends to the heart,

heart, ſo that the inflammation is attended with general increaſed action of the vaſcular ſyſtem, that is, with ſynocha, we obſerve that, as the inflammation yields, the general excitement ſubſides, and that when the inflammation is removed, the whole ſyſtem is left in a ſtate of greater debility than before the diſeaſe. In ſhort, inflammation ſeems to conſiſt in the debility of the capillaries, followed by an increaſed action of the larger veſſels, and is terminated as ſoon as the capillaries are ſo far excited, and the larger arteries ſo far weakened, by their exceſſive action, that the force of the capillaries are in due proportion to the vis a tergo.

But it is not by induction and general reaſoning alone that the theory now mentioned is endeavoured to be ſupported. The author adduces direct experiments to ſhew that in inflammation there is really a diminiſhed action of the capillaries. ' It is no difficult matter,' he obſerves, ' to determine the ſtate of the circulation in an inflamed part. An inflammation had been excited, I do not know how, in the web of a frog's foot; having applied it to the microſcope, I found the veſſels of the part greatly dilated, and the motion of the blood extremely languid. In ſeveral places, where the inflammation was greateſt, it had ceaſed altogether. It was at once evident, on obſerving the part through the microſcope, that where the inflammation was greateſt the veſſels were moſt dilated, and the motion of the blood was ſloweſt. Nor did I, in one inſtance, obſerve the alternate contractions and dilatations ſuppoſed by Dr. Fowler to be the very eſſence of inflammation.

' The diſtention of the veſſels, which in the healthy ſtate admit only the colourleſs parts of the blood, was apparent, for in the inflamed parts a much greater number of veſſels admitted the red particles than in the ſound, and the interſtices of the red veſſels appeared more opake, probably from the enlargement of innume-

innumerable ſmall veſſels, ſtill too ſmall to admit the groſſer parts of the blood.

'While I was viewing the inflamed web, it occurred, that, if I could ſucceed in ſtimulating its veſſels to action, and thus remove the inflammation, which by this time I was thoroughly convinced depended on their debility, this would be an additional proof of the doctrine before us.

'With this view I wetted the inflamed web with diſtilled ſpirits, at the ſame time throwing upon it the concentrated rays of the ſun from the ſpeculum of the microſcope. The blood, in all the veſſels, except in thoſe of the moſt inflamed part, began to move with greater velocity, and, in proportion as this took place, the diameters of the veſſels were diminiſhed, and the redneſs became evidently leſs remarkable, the web ſeemed paler, and the interſtices of the veſſels became leſs opake.

'In the moſt inflamed part, however, the blood was ſtill ſtagnant. After I had deſpaired of reſtoring action to the veſſels of this part, I ſaw the blood begin to move ſlowly in a veſſel which ran directly through the middle of it. It ſoon acquired a conſiderable velocity, and, on taking a ſuperficial view of the part through the microſcope, the courſe of this veſſel appeared like a ſtreak of a lighter colour through the middle of the red inflamed part.

'This experiment appeared deciſive. As I had not, however, obſerved the inflammation from its commencement, I repeated the experiment, with the aſſiſtance of the Rev. Mr. Boraſton, on a ſmall fiſh (the lampern).

'We found that continued expoſure to the air produces a degree of inflammation, evident to the naked eye, in the fins and tail of this fiſh. On viewing the former through the microſcope, we obſerved the circulation become more languid, and the veſſels enlarge as the inflammation came on. The motion of the blood in the moſt inflamed veſſels at length ceaſed altogether.

'By

'By gentle friction and applying diſtilled ſpirits, we repeatedly ſucceeded in accelerating, and even renewing, the motion of the blood; and in proportion to the velocity of the circulation, the veſſels became evidently paler, the deeper red returning as the circulation again became more languid.

'On roughly irritating a part where there was no inflammation, the part being pale, and the circulation rapid, the motion of the blood was for a ſecond or two wholly interrupted (Mr. Boraſton obſerved the part while I irritated it), the force I uſed having compreſſed the veſſels. The vis a tergo, however, ſoon forced the blood into them; and this experiment having been repeated ſeveral times, both Mr. Boraſton and myſelf ſaw the now-debilitated veſſels of the parts which had been irritated gradually dilated by the blood propelled into them, till the veſſels having acquired many times their former dimenſions, the part appeared highly inflamed. The motion of the blood at the ſame time became extremely languid, and in the moſt diſtended veſſels ceaſed altogether. Some, even of theſe laſt, we ſucceeded in exciting to action, and in proportion as the motion of the blood was accelerated, the veſſels became paler, the inflammation being evidently diminiſhed. In theſe experiments there was no extravaſation of blood, except in one inſtance, in which the veſſels were ſo roughly irritated as to wound ſome of them.

'The foregoing experiments having been made on cold-blooded animals, to obviate any objection which might hence ariſe, it was neceſſary to repeat them on an animal of warm blood.

'The ear of a very young white rabbit ſeemed, from its tranſparency, the moſt proper ſubject for ſuch experiments. It was accordingly ſubmitted to the microſcope, with every advantage of light that could poſſibly be obtained, but the endeavours, both of Mr. Boraſton and myſelf, to diſtinguiſh the circula-

tion with ſufficient accuracy were fruitleſs. The only alternative, therefore, which remained, was an experiment of a very unpleaſant nature.

'I made a ſmall opening through the ſkin and muſcles of the abdomen, through which, by the ſtruggles of the animal, a portion of the inteſtines and meſentery were ſoon protruded. I then brought part of the latter within the field of the microſcope, and gently irritated it with the point of a pair of forceps, while Mr. Boraſton, who has been much accuſtomed to the uſe of the microſcope, and to delineate the objects it preſented, obſerved the effects; the account of which I give in his own words, with engravings from the drawings he was ſo kind as to favour me with, repreſenting the different ſtages of inflammation, from its commencement to its height. That the reader may be aſſured Mr. Boraſton's account is wholly unbiaſſed, it is proper to obſerve, that, till after he deſcribed to me what he had obſerved in this experiment, he was unacquainted with the object I had in view in making it.

"The large arteries and veins were too opake to admit of my diſtinguiſhing the motion of the blood, but in the ſmall veſſels, which were more tranſparent, the circulation was eaſily obſervable, and I perceived the globules of the blood moving along with great rapidity, but not in ſufficient quantity to give a red colour to the veſſels.

"After a few minutes expoſure to the air, the veſſels became viſibly enlarged, and in ſome parts aſſumed a reddiſh colour, while the velocity of the blood was proportionably diminiſhed.

"As ſoon as a part of the meſentery, which lay within the field of obſervation, and appeared almoſt colourleſs, was irritated with the point of a ſmall pair of forceps, a red ſpot appeared. In a few ſeconds it increaſed in ſize, the adjacent parts of the veſſels were diſtended, and, the current of blood becoming

becoming leſs rapid, was for ſome diſtance ſlightly tinged with a red colour.

"This enlargement of the veſſels gradually extended till the part preſented the appearance of fig. 4. The circulation was at this time extremely languid, and at length was not diſcoverable at all. When, in this laſt ſtage, the motion of the blood was entirely ſtopped, a reddiſh ſhade was ſeen to have diffuſed itſelf over thoſe parts of the membrane contiguous to the inflamed veſſels."

'The reddiſh ſhade here mentioned, between the interſtices of the veſſels, was evidently owing to the irritation and diſtention having produced a ſlight rupture of ſome of the veſſels, by which a ſmall quantity of blood eſcaped.'

Theſe experiments, the author thinks, demonſtrate that the ſtate of the capillaries in an inflamed part is that of preternatural diſtention and debility. That the action of the larger veſſels is at the ſame time increaſed, is evident to the ſenſes, and indeed univerſally allowed. Aſſuming, then, the theory as proved, it is next attempted to explain the phenomena of the diſeaſe, the modus operandi of its cauſes, and of the means which relieve it.

The ſwelling is attributed to diſtention of the capillary veſſels, the conſequence of accumulation of blood in them, their debilitated action not ſufficing for its tranſmiſſion as rapidly as before. The pain is likewiſe a conſequence of the diſtended ſtate of the minute veſſels. The redneſs of inflamed parts is referred to the increaſed quantity of arterial blood in the part, and the raiſed temperature to the ſame cauſe, more of that principle being preſent which is the cauſe of the evolution of caloric from the blood. With reſpect to the increaſed action of the larger arteries in inflamed parts, and of the heart and whole arterial ſyſtem in the phlegmaſiæ, the final cauſe, the author thinks, is ſufficiently evident: as the in-

flamed veffels are debilitated, an increafe of the vis a tergo is at once a means of promoting the circulation in the part, and ftimulating the debilitated veffels to action.

'If inflammation depend on the diminifhed proportion of the power of the capillaries to the vis a tergo, it will, it is evident, be moft apt to fupervene under the three following circumftances. 1. In a ftate of phlethora, becaufe then all the veffels are over-diftended, and confequently any caufe tending farther to diftend any of them, whether it be a caufe debilitating them, or increafing the vis a tergo, will be more felt than in health. 2. In a ftate of general debility, becaufe then the vital powers in any part are more readily deftroyed than in health. 3. In a ftate of general excitement, becaufe then the vis a tergo is every where ftrong, and confequently apt to occafion diftention of the veffels wherever any degree of debility occurs. Thefe are the ftates of the fyftem, it has been obferved above, which are found to predifpofe to inflammation. In the firft and laft, the inflammation is generally of that kind which has been termed active; the vis a tergo is confiderable, the larger arteries being readily excited to increafed action. In the fecond of the above ftates, what is termed paffive inflammation is moft common, the larger arteries, in proportion as the fyftem is debilitated, being lefs readily excited.

'The greater the general debility, the greater, it is evident, muft be the partial debility before inflammation can take place, becaufe, however debilitated the veffels of any part may be, inflammation will not fupervene if the vis a tergo is debilitated in the fame proportion; hence the partial debility in fuch cafes muft be very great, and confequently the inflammation will foon run to gangrene, as happens in the inflammations fo readily excited in typhus, &c. Nay, in cafes of extreme debility, an injured part runs to gangrene almoft without any fymptom of inflammation,

tion, the vis a tergo being too feeble to diſtend the veſſels, however much debilitated.'

Having noticed the different terminations of inflammation, viz. by reſolution, ſuppuration, and gangrene, Dr. Wilſon proceeds to the treatment. The means which tend to produce the firſt of theſe, a termination always to be deſired, are arranged under two heads. 1. Thoſe which leſſen the volume of fluid diſtending the debilitated veſſels, either by directly abſtracting part of that fluid, which is done by evacuating part of it, or by occaſioning a congeſtion in ſome neighbouring part; or by diminiſhing the vis a tergo which occaſions the accumulation. 2. By the application of ſtimuli to the inflamed part, by which the debilitated veſſels are excited to action.

We have thus endeavoured to ſtate, as fully and fairly as poſſible, the arguments adduced by the author in ſupport of the theory of inflammation he adopts, convinced, as we are, of its importance, and of its influence on the treatment of the diſeaſe. We are compelled to acknowledge, however, that we are not yet converts to the doctrine, and ſhall proceed to ſtate the difficulties we feel in admitting it.

It appears to us that the phenomena of the diſeaſe can in no way be ſo well explained as on the ſuppoſition of a general increaſe of action in the veſſels of the inflamed part, as well the capillaries as the larger trunks. The ſwelling, doubtleſs, is owing to diſtention; but although debilitated veſſels are more eaſily diſtended by the vis a tergo, it does not neceſſarily follow, as Dr. Wilſon ſeems to ſuppoſe, that diſtention is a conſtant mark of debility. Have we not, amongſt others, an inſtance of the contrary in the uterus, which, at the very time that it undergoes a great degree of diſtention, acquires both thickneſs of ſubſtance and increaſe of contractile power? Diſ-

tention of vessels, therefore, may in like manner be accompanied with augmented contractility.

But it is said, the muscular fibres of arteries run transversely, and, therefore, in contracting more forcibly, must of necessity tend to diminish the area of the vessel. This argument would go to prove that a muscular structure in arteries, instead of promoting the circulation of the blood through them, must on the contrary tend, above all things, to prevent its transmission; and a vessel possessing elasticity merely would be far more favourable to the purpose than a muscular structure. But no one now doubts that the chief agent in the circulation is the muscular power of the arteries themselves, this power increasing in proportion as the vessel diminishes in size. If, therefore, the muscular coat of the arteries contributes, in any degree, to the motion of the blood forwards, it is natural to infer, that an augmentation of the muscular power would occasion an increase of the force of circulation. Nor are we warranted in limiting the contraction of the muscular coats of arteries to a transverse direction; for we see the contrary in the retraction of divided arteries in amputation, and other cases, where the extremities of the vessels are gradually drawn within the fleshy parts.

If the capillary vessels in inflammation are in a debilitated state, the circulation must be retarded in the inflamed part; and this is what the author contends is the case. But is not the contrary proved, we would ask, by the free flow of blood from inflamed vessels when divided; for instance, when the tunica conjunctiva is scarified in ophthalmia? and is not the same thing more strongly shewn, in the enlargement of veins coming from inflamed parts, which could not take place if the transmission of blood through the arteries were impeded? The increased secretion and formation of new parts, which frequently accompany inflammation, are, likewise, further proofs of the increased action of the capillaries: torpor of these vessels

ſels is not likely to be accompanied with ſuch phenomena.

The increaſed redneſs of inflamed parts is better accounted for on the ſuppoſition of increaſed circulation than on the contrary hypotheſis; for the more ſlowly the blood is tranſmitted, the leſs florid ſhould be its colour, till, as it approaches to ſtagnation, it acquires a purple hue. In like manner, increaſed temperature is eaſily referrible to the ſame increaſe of circulation: for if arterial blood evolves caloric as it circulates, it follows, that the greater the quantity of blood which paſſes through a part, the higher ſhould be its temperature, ſubject, however, to the law mentioned by the author, of the diſpoſition to evolve caloric diminiſhing in the ſame ratio that the temperature of the blood increaſes.

The increaſe of nervous power in inflammation is evident from the exquiſite ſenſibility of inflamed parts; and it is hardly poſſible that this energy ſhould not be communicated to the veſſels, and thus increaſe their contractility. It is equally improbable that capillary veſſels and their contiguous trunks ſhould be in a condition totally oppoſite to each other. For in a veſſel that is gradually and regularly diminiſhing in ſize, where is the line of diſtinction to be drawn between the debilitated capillary and its correſponding trunk? or how comes it that the minute veſſels, which are allowed to poſſeſs ſo much more muſcular power, ſhould ſo readily fall into a debilitated ſtate from diſtention, whilſt the more elaſtic trunks retain for ſo long a time their augmented energy? We may employ here the words of the author, as applied to Dr. *Fowler* (who ſuppoſes the veins to be debilitated, and the arteries in a ſtate of increaſed action), and aſk, by what experiments has he diſcovered that the *capillaries* of an inflamed part are more debilitated than the neighbouring trunks?—What nice line of diſtinction has Dr. *Wilſon* diſcovered between an *arterial trunk* and the *capillary* in which it terminates? The obſer-

vation made by the author in ſupport of his opinion, that the farther the veſſels are removed from the heart, the more readily they are debilitated, does not ſeem applicable to the capillaries in reſpect of their correſponding trunks, as we know that the muſcular power of arteries increaſes inverſely as their diameters.

If, again, we look to the nature of the *exciting cauſes* of inflammation, we ſhall find further reaſon to ſuſpect an increaſed action of the capillaries, for theſe being all ſtimulant in their operation, and in many caſes, as in burns, exciting inflammation inſtantly on their application, the inflamed ſtate continuing, too, at the very time that they are acting, it is highly improbable that debility ſhould have ſo rapidly taken place. The good effects which frequently follow the uſe of ſtimulating applications, in the treatment of inflammation, admit of explanation in another way. Inflammation is not ſimply an increaſed action of the veſſels of a part, but a *new* action, inſtituted in the œconomy for wiſe purpoſes, perhaps in all caſes tending to the removal of the cauſe of injury. One part of this, however, appears to be an increaſed circulation of the blood; and indeed it is not conceivable, without this, how ſuch great and important changes ſhould be brought about during inflammation.

Such are the difficulties that ſtrike us in the theory here endeavoured to be eſtabliſhed. The evidence deduced from actual obſervation with the microſcope, though at firſt view appearing to afford demonſtration, is perhaps leſs ſtrong than the author himſelf conceives. In ſaying this, we diſclaim all idea of queſtioning in the leaſt the veracity of the author or his coadjutor: but it is fair to obſerve, that microſcopical experiments are often exceedingly deluſive, and can ſeldom be implicitly relied on. In the experiments here recited, the parts were found to increaſe in redneſs as the inflammation came on; and, of courſe, the opacity of the membranes increaſed alſo. When the

the redneſs of a part became general, from the number of red globules impelled into it, the motion of the current muſt be more difficultly obſerved, and at length imperceptible. It is not improbable that, in inflammation, the red globules themſelves undergo a change of figure from the more violent action of the veſſels on the circulating blood: they may thus be broken down, and fitted to enter veſſels that were before impervious to them, and in this manner the motion of the fluids in the part would become more difficultly diſcernible. That the red particles are ſuſceptible of a very minute diviſion, ſtill retaining their colour, and even becoming more florid thereby, is evident from their diffuſion in water, a large maſs of which may be uniformly tinged of a bright red by a comparatively minute quantity of blood. Microſcopical experiments, therefore, require to be multiplied and varied, both in inſtruments and obſervers, in order to produce conviction, eſpecially in a matter of ſuch difficulty and importance as the one under conſideration.

We cannot quit this unuſually long diſcuſſion without remarking, that, whether the author be juſtified or not in his adoption of the theory propoſed, he has not ſuffered himſelf to be influenced by it in the practical part of his work, in oppoſition to obſervation and experience. We every where ſee the moſt approved methods of cure inculcated without reference to their ſquaring with this or that doctrine; and the ſtudent will, in all caſes, find him a ſafe and accurate guide in practice.

Having treated of inflammation and the other local affections in ſymptomatic fevers, the author proceeds to the particular conſideration of the *phlegmaſiæ*; but our notice of this muſt be reſerved for a future number.

ART.

Art. XXXV. *Medical Jurisſprudence: on Madneſs.* *By* John Johnstone, *M.D.* Octavo, 48 pages, price 2s. 6d. London, 1800. Johnson.

THE obſervations here made are intended as a brief compendium of the doctrines of inſanity, and form a part of a collection on ſubjects relating to medical juriſprudence, which it is the author's intention to preſent the public with at ſome future time. The late trial of *Hadfield*, for an attempt on the life of the Sovereign, has rendered the ſubject highly intereſting; and it becomes a matter of the greateſt moment, that the ideas of mankind, eſpecially of thoſe who have the direction and controul over men's actions, as guardians and adminiſtrators of the laws, ſhould be correct and well founded, with reſpect to the nature of inſanity, ſo far, at leaſt, as to enable them to determine on its preſence or abſence; "Leſt, on the one hand," as Judge *Hale* obſerves, "inhumanity be practiſed towards the defects of human nature;" or, on the other, "there be too great an indulgence given to great crimes." How unſettled opinions are on this head will appear from the following paſſage:

'It is neceſſary here to notice the opinions of lawyers on the ſubject of madneſs, and of what they term lucid intervals; and ſorry am I to obſerve, that the conſideration and mercy ſo generally characteriſtic of our laws are on theſe topics not to be found. On the contrary, a principle ſeems to be adopted which religion, morality, and law have uſually kept in the back ground, though in human ſyſtems it cannot be entirely forgotten—that of reaſoning from the poſſibility of abuſe. In matters of property, it is the opinion of lawyers, that the lucid interval is only to be determined by a return of ſoundneſs and reaſon. If a man were evidently mad on Monday, and on Wedneſday, the law pronounces that there was no lucid interval

interval on the intervening day: in criminal matters, the capacity for acting is determined not by the proximity of the paſt, or of the ſubſequent inſanity. If there are ſigns of reaſon at the moment of the commiſſion of a crime, more eſpecially of a heinous crime, the law judges ſuch ſigns of reaſon to conſtitute a lucid interval.

'In ſupport of the firſt poſition, we have the Chancery deciſion of Lord Thurlow, who emphatically obſerved at the time, that to decide otherwiſe, "would be letting Bedlam looſe upon mankind." In ſupport of the ſecond, we have the venerable authority of Judge Hale, and the comments upon his judgment, in the trials of Lord Ferrers, &c.'

Thus does the law countenance two different interpretations of a fact. For, as the author juſtly obſerves, how can we otherwiſe account for this ſtrange ſoleciſm, that the laws decree a man to be mad, and incapable of alienating property, who might be hanged for the deſtruction of the life of a fellow-creature, becauſe he *appeared* compoſed and rational at the time, though confeſſedly inſane before and afterwards? Such a diſpenſation of law is ſo contrary to ſcience, ſuch an abominable outrage againſt ſociety, ſo high a treaſon againſt Nature, that it ought inſtantly to be done away.

The author is of opinion that madneſs has, properly ſpeaking, no lucid intervals, except we chuſe to denominate the calmneſs, and apparent indifference, when the hallucination is not touched upon, a lucid interval. A man, he obſerves, at any given moment, is either mad or not—his brain and ſenſorial powers muſt either actuate him to the actions of the ſound mind, or not. He may appear rational when he is not—he may converſe upon indifferent ſubjects with apparent reaſon one minute, and the next may ſtrangle you in a fit of frenzy: but can this, he aſks, be termed a lucid interval!—The concluſion from the author's doctrine is, that maniacs are not amenable to law for

actions

actions done in their intervals of apparent reaſon; however long in duration the interval may be: but the ſubject is involved in great difficulties, and Judges and Juries, in deciding on ſuch caſes, have an arduous and anxious taſk to perform.

ART. XXXVI. *A Letter to Dr.* PERCIVAL, *on the Prevention of Infectious Fevers. And an Addreſs to the College of Phyſicians at Philadelphia, on the Prevention of the American Peſtilence. By* JOHN HAYGARTH, *M.D. F.R.S. &c. &c.* Octavo, 188 pages, price 5s. London, 1801. CADELL and DAVIES.

INFECTIOUS fevers, which formerly committed ſuch ravages among the human race, and which even at the preſent moment reign almoſt without controul in large portions of the globe, have, with us, loſt much of their terrors, from the exertions of enlightened phyſicians of late years, and the ſucceſsful employment of preventive means. Among philoſophers of this deſcription, no one ranks higher than the author of the *Letter* before us: to him we are chiefly indebted for pointing out how eaſily and effectually a calamity of this ſort may be prevented by proper means. On a ſubject of ſuch high import to mankind, it would be unpardonable in us to beſtow a ſuperficial notice. We ſhall, therefore, endeavour to lay before our readers the moſt intereſting facts and deductions relating to it.

So long back as the year 1777, the author began to aſcertain, by clinical experiments, according to what law the variolous infection, and, in 1780 and 1781, according to what law the febrile infection is propagated. He found that the pernicious effects of the variolous miaſms were limited to a very narrow ſphere. In the open air, and in moderate caſes, he diſcovered

diſcovered that the infectious diſtance does not exceed half a yard*. Hence it is probable that, even when the diſtemper is malignant, the infectious influence extends to but a few yards from the ſource of the poiſon. He ſoon alſo diſcovered, that the contagion of fevers was confined to a much narrower ſphere, and ventured to recommend the admitting fever patients into wards of the Cheſter Infirmary itſelf, inſtead of an adjoining building, as he had before propoſed.

In order to aſcertain the latent period of typhus fever, that is, the interval which occurs between expoſure to infection and the firſt appearance of the ſymptoms, a conſiderable number of caſes are arranged in a tabular form, for the purpoſe of giving a ſynoptical view of the ſubject. The ſame tables ſerve to ſhew, likewiſe, the proportion of perſons liable to receive infection when ſo expoſed.

It appears clearly, from the facts adduced, that not one in twenty-three, or even one in thirty-three, eſcapes infection when expoſed for a ſufficient length of time. It hence appears, alſo, that as many perſons are liable to receive the typhous as the variolous contagion. The author judges, however, that a certain doſe, as in other caſes of poiſon, is neceſſary in order to infection being taken. 'The larger the doſe of a poiſon or drug,' he obſerves, 'the greater in general is the effect which it produces. Many of the moſt powerful and ſalutary medicines, when taken in too large a quantity, are poiſons, as opium, antimony, mercury, hemlock, aconite, foxglove, &c. Even arſenic itſelf, the moſt virulent and unmanageable of all poiſons, by the ſkill and attention of phyſicians, has been reclaimed from the claſs of miſchievous ſubſtances, and, by a diminution of the doſe, is held, on good authority, to be a ſafe and uſeful remedy.

'On this ſubject, a farther analogy ought to be taken into conſideration. In different conſtitutions, and in

* See the *Inquiry how to prevent the Small-Pox*, by Dr. Haygarth.

different

different indiſpoſitions, there is a certain degree of variety in the operation of any drug; in ſome more than others. Few drugs are ſo uncertain in their effects as antimony: four or ſix times the doſe of it may be required for one patient more than for another, or for the ſame perſon in different diſeaſes. In moſt other medicines and poiſons, the difference between the leaſt and greateſt operating doſe is much leſs than what is here ſtated. The miſchievous quantity of infectious miaſms, as might be expected from the analogy here explained, admits of ſome degree of variation. They propagate the ſmall-pox, however, with much uniformity, as has been proved in the Inquiry and the Sketch. It is not improbable that debility, or indiſpoſition, or fear, or expoſure to cold or fatigue, or, as ſome ſuppoſe, a difference of diet, may occaſion greater variety in the quantity of poiſonous miaſms requiſite to produce an infectious fever than the ſmall-pox. In theſe peculiar circumſtances, a ſufficient, which can only be a ſmall, allowance may be made for the difference, without much difficulty.'

It follows from what has been ſaid reſpecting the doſe of infection, and which is fully confirmed by the author's experience, that when the chamber of a patient ill of an infectious fever is ſpacious, airy, and clean, few or none, even of the moſt intimate attendants, will catch the diſtemper.

A certain time of expoſure ſeems alſo to be neceſſary, in order to the effect being produced. It appears, from the example of medical practitioners, that air ſtrongly impregnated with infectious miaſms may be breathed for a ſhort time, and air weakly impregnated for a long time, without any injury. We might hence be led to imagine, that the poiſonous miaſms do not generate a fever till they have been reſpired, without interruption, for ſeveral days; and it is not improbable that, in ſome perſons, ſuch an accumulated quantity of the poiſon may be required. But, on the contrary, other facts manifeſtly prove, that a ſhort expoſure

pofure to a peftilential atmofphere can, in fome inftances, produce a fever.

Perfons confined in the midft of contagion are enabled to bear a much larger dofe of it than others. Thus it is a well known fact, that felons have worn clothes without injury, which, neverthelefs, communicated infection to frefh perfons in a court of juftice. The argument, however, the author remarks, does not apply to medical perfons, as their expofure is at intervals only, and at uncertain periods: and we know, with refpect to other applications, that fuch is not fufficient to prevent their action.

It is probable, the author thinks, that the poifon of typhus is infectious at a greater diftance in air that is vitiated by refpiration; efpecially when we confider, what is generally allowed, that putrid fevers are *generated* by a great number of perfons crowded together into the fame room, as in a fhip, jail, &c.

The whole evidence which the author has been able to collect, inconteftibly leads to this very important conclufion, that febrile infection extends but to a very narrow fphere from the poifon, lefs probably than that of fmall-pox. It appears highly improbable, he thinks, that the typhous infection fhould ever be communicated, in the open air, by the common intercourfe of fociety; becaufe vifitors, and even attendants, with very few exceptions, efcape the fever, when expofed to it in even the fame chamber, if clean, airy, and fpacious. In like manner, clothes expofed to typhus miafms are not likely to acquire a peftilential quality, fo as to communicate infection. Infectious miafmata being invifible, it is chemically demonftrable, the author obferves, that the poifonous vapour is united with air by folution, and not by diffufion fimply; for it is maintained, that no two fubftances do, in any inftance whatever, exift together, in a perfectly pellucid ftate, unlefs they are chemically united with each other. If the febrile miafms, therefore, be diffolved in air, and attracted from it by clothes,

clothes, they could not, in the ſame circumſtances, on any known principle, be again attracted from clothes by air, as this would be contrary to the laws of elective attraction. The author, however, is not an advocate for the doctrine which has been taught in France, Germany, and other parts of the continent, viz. That infectious fevers, ſmall-pox, and even the plague, are never caught, except by contact of the patient or poiſon. This error, if it be one, is no doubt highly dangerous in its tendency.

With reſpect to the period at which a typhus fever becomes infectious after its commencement, the author has no ſatisfactory documents to bring forwards. The latent period of infection appears to vary from a few days to two months, without any regularity as to this point. Some have ſuppoſed that fever takes place, in ſome caſes, immediately after expoſure; but this appears doubtful, as of ſeventy-two caſes here collected, it was not ſuſpected, except in one ſingle inſtance, that the fever began immediately from the time when the infection was caught.

Theſe preliminary obſervations lead the author to a number of important practical concluſions:

1. 'Medical, clerical, and other viſitors of patients in infectious fevers, may fully perform their important duties with ſafety to themſelves.' The great means of prevention are cleanlineſs, and ſufficient ventilation.

2. 'In any houſe, with ſpacious apartments, the whole family, even the nurſes of a patient ill of a typhus fever, may be preſerved from infection.'

3. 'Schools may be preſerved from febrile infection.' The truth of this poſition is finely illuſtrated by the following facts, publiſhed by the author in his *Sketch of a Plan for exterminating the Caſual Small-Pox*, in the year 1784. "In April 1779, Maſter Plumbe, the ſon of a gentleman of fortune near Liverpool, was attacked, in a dangerous degree, with a ſcarlet fever and ſore throat, in the houſe of his ſchool-maſter, the Rev.

Rev. Mr. Vanbrugh, at Chefter. There were at this time thirty-feven young gentlemen, boarders in the family, moft of whom, it is highly probable, were difpofed to receive this dangerous contagion. My patient's chamber was fituated in the middle of the houfe, at the landing of the firft pair of ftairs: all the fcholars went clofe paft his door feveral times a day. At this feafon, Winchefter, and feveral other large fchools in England, fent home and difperfed their fcholars, on account of this diftemper, which had alarmingly fpread among them. Whether this meafure, with all its inconveniences, was not adviseable, became a ferious queftion. The numerous facts which I had then collected to prove that the variolous infection, though probably the moft virulent we are acquainted with in this climate, exerted its baneful influence but to a fmall diftance only from the poifon, encouraged me to hope that the contagion of a fcarlet fever was incapable of producing more extenfive mifchief. The *Rules of Prevention* were placed on the door of the patient's chamber, and rigid attention to their faithful obfervance was required. The event fully juftified my hopes. Though all the thirty-feven fcholars remained in the fame houfe and family during the whole difeafe, yet not one of them was infected.

'I do not recollect any obfervations recorded by authors to determine what proportion of mankind are liable to the attack of the fcarlet fever. In October 1778, out of forty young ladies, at a boarding-fchool in Chefter, all but four had the diftemper, twelve very feverely, and two moft dangeroufly. This comparative ftatement of facts fhews, beyond all reafonable doubt, to what a little diftance from the poifon the infectious miafms extend, and that the *Rules of Prevention* are in this refpect fully adequate to their purpofe.'—The fame doctrine is applicable to fmall-pox, meafles, fcarlet fever, chin-cough, mumps, &c.

4. ' In an hoſpital, infectious fevers ought never to be admitted into the ſame wards with patients ill of other diſeaſes.

5. ' When an infectious fever is in a ſmall houſe, the family cannot be preſerved from it, unleſs the patients are removed into a ſeparate building.

6. ' In like manner, infectious fevers may be prevented in the army and navy.'

Subjoined to the *Letter to Dr. Percival*, is an Addreſs to the College of Phyſicians at Philadelphia, on the Prevention of the American Peſtilence. Our readers have been made acquainted with the vague and contradictory opinions held by the different practitioners of that country, with regard to the nature and origin of the diſtemper; diſputes that probably were productive of the very worſt effects; for a conſiderable number of the phyſicians of New York and Philadelphia were led, by pre-conceived notions, to neglect, and even to oppoſe, plans the moſt effectual for its prevention. The College of Philadelphia, we ſaw, were fully convinced, on what appear incontrovertible grounds, of the contagion being of imported origin; an opinion which Dr. Haygarth thinks ſufficiently eſtabliſhed to produce general conviction. The oppoſite opinions are here reviewed, and the evidence on which they were built minutely ſcrutinized. And it appears to the author, that the *Academy of Medicine in Philadelphia* have alledged the moſt frivolous, inadequate, and groundleſs cauſes of this calamitous diſtemper.—But of theſe our readers are already in poſſeſſion.

ART. XXXVII. *Obſervations on the Bile and its Diſeaſes*, and on the Oeconomy of the Liver; read at the Royal College of Phyſicians, as the Gulſtonian*

* Query—What are the diſeaſes of the bile?

Lecture

Lecture of the Year 1799. *By* RICHARD POWELL, *M. D. Fellow of the College, &c.* Octavo, 180 pages, price 4s. London, 1800. RIVINGTONS.

THE late elaborate Treatiſe of Dr. *Saunders** *on the Structure and Oeconomy of the Liver*, firſt delivered, like the preſent, as the *Gulſtonian* Lecture, has left us little to expect in the way of novelty on the ſubject; and, in fact, not much of this ſort will be found in the work before us: whatever is peculiar, however, in doctrines or practice, we ſhall proceed to notice in courſe.

After deſcribing the ſtructure of the liver, and its relative ſituation in the body, and having pointed out the peculiarities of this viſcus in the foetal ſtate, the author inquires into the ſources of the bile; to wit, whether it be ſecreted by the extremities of the hepatic artery, or by thoſe of the vena portæ, according to the now generally received opinion. The higheſt authorities, it is obſerved, ſince the diſcovery of Harvey, which deſtroyed the ideas of the antients, reſpecting the importance of the liver to the motion of the blood, have given this office to the vena portæ, and the following are the chief arguments upon which they have reſted this opinion: That no other idea can ſufficiently explain the peculiar diſtribution of the vena portæ through the liver, differing, as it does, in the ramifications of its trunk towards the heart, from every other vein in the body. That the diſtribution of its extreme branches, when they are injected, reſembles the diſtribution of thoſe arteries which are known to be ſecretory. That no other reaſon can be given why a branch of vena portæ ſhould ſo conſtantly, and uniformly accompany a branch of the biliary duct. That the venal blood, as it returns from the inteſtines, the veins of which unite to form the vena portæ, is

* See Med. and Chir. Rev. v. i. p. 79. and v. iii. p. 13, for an account of this Work.

 neceſſarily

neceffarily loaded with acrid and oily particles, and, therefore, is more particularly fuited to the fecretion of, what was thought to be, the moft acrid and oily fluid of the whole body. That there is not the ufual relation of fize between the branches of the hepatic artery and the biliary duct; and that, if this artery formed the bile, there would not have exifted ducts, for the reception of the fecreted fluid, of a larger capacity than the whole of the fecreting artery, while the branches of vena portæ are larger than thofe of the biliary duct, and thus ftand to them in the ufual relation: and, laftly, that Malpighi performed the experimentum crucis by tying up the hepatic artery of a living animal, and finding that the fecretion of bile was not interrupted.

Thefe arguments, it appears, are not fufficiently ftrong to induce the author to adopt the opinion in queftion. They are, as he obferves, except the laft, arguments from analogy, rather than from experiment; they appear, however, of no fmall weight, if we except that which fuppofes the blood of the vena portæ to be peculiarly fitted for the purpofe of forming bile, a fuppofition for which there has certainly not been a fhadow of proof offered. The experiment of *Malpighi*, the author thinks, is not decifive, as the bile found might have been previoufly in the ducts, or furnifhed by the arterial blood ftill remaining in the veffels. The analogies, on the other fide, he thinks, are ftill more ftrong, which lead us to fuppofe, that one cafe of fecretion refembles every other, and that it is performed by an artery in the liver, as it is known to be in all other glands of the body. It may likewife be mentioned, that the peculiar diftribution of blood by the vena portæ fubfifts at a very early period of the exiftence of the fœtus, though it is chiefly fupplied from another fource; and that this cannot be intended for the fecretion of bile, which takes place in fo fmall a proportion to its caufe during the continuance of the fœtus in the uterus.

But

But the argumentum crucis in this caſe is the diſſection related by Mr. *Abernethy*, in the *Philoſophical Tranſactions* for 1793, where the vena portæ was entirely wanting, yet good and perfect bile was found in the liver. This fact may be placed in oppoſition to the experiment of *Malpighi* above quoted: the reader may draw his own inference from ſtatements ſo much in oppoſition with each other. The author, however, decides in favour of the hepatic artery, as the ſecretory organ, and aſſigns another uſe to the vena portæ.

His opinion on this ſubject is, that the vena portæ is ſubſervient to the purpoſes of the circulation, as a ſort of reſervoir to the heart, which prevents the rapid return of blood to the right auricle, which would take place without it; and, under circumſtances of difficulty or obſtruction to its paſſage through the lungs, allowing, by its diſtention, of a conſiderable accumulation for their relief. This opinion he has been led to adopt from an attention to ſome circumſtances of diſeaſes of the lungs, which have frequently been found accompanied by a diſeaſed ſtate of the liver. 'In examining phthiſical patients,' he remarks, 'or ſuch as have, from any cauſe, had the lungs rendered leſs pervious to the circulating blood, I have *very frequently found* the liver enlarged in its ſize, and looſer in its texture; in ſome very conſiderably ſo, and appearing little more than a connected maſs of blood, readily giving way, and breaking down on the application of ſlight preſſure; and, in other caſes, injections puſhed into the vena portæ have ſeemed to diſtend the liver more readily and completely, than where no diſeaſe of the lungs ſubſiſted.'

What weight in argument theſe obſervations poſſeſs, we ſhall not determine; but the appeal to experience, when ſcrutinized, has certainly not much. To have obſerved what is here aſſerted, the author muſt at leaſt have witneſſed as many diſſections as *Morgagni*, *Bonetus*, or the other few laborious and indefatigable anatomiſts of the laſt century; a ſuppoſi-

 tion

tion that does not very well accord with his known habits and opportunities. What muſt have been the number of diſſections of phthiſical patients which could have afforded '*very frequent inſtances* of the liver enlarged in ſize, and looſer in texture; and *ſome very conſiderably ſo*, appearing little more than a connected maſs of blood, and breaking down on the application of ſlight preſſure?' and of others, where 'injections puſhed into the vena portæ have ſeemed to diſtend the liver more readily and completely than where no diſeaſe of the lungs ſubſiſted?' It is evident that no man could have obſerved 'very frequent inſtances' of all this. This broad and unguarded mode of aſſertion is too common in medical writings, and cannot be too much reprobated; ſince it tends to introduce as general laws, what, if the obſerver were even accurate, ought only to rank as exceptions, and thus obſtructs moſt materially the progreſs of ſcience. This is an evil which exiſts to a great extent in medicine, the teſtimonies of which few can venture to place much reliance on. Errors thus generated are perpetuated; for medical experiments cannot be reviſed. "The dead tell no tales."

The qualities of the bile are next conſidered. The experiments on this head are minute and apparently accurate. Bile has been ſuppoſed to conſiſt in great part of a peculiar reſin, rendered ſoluble in water by its union with ſoda; but the experiments of the author ſeem to ſhew that the ſuppoſed reſinous matter has not ſufficient analogy with this claſs of bodies to juſtify its arrangement with them. It liquefies in a lower temperature; it can ſcarcely be called inflammable; it is inſoluble in oil of turpentine, and unites abundantly and readily with alkalies. It ſeems rather to be a peculiar modification of animal matter, characterized by its bitter taſte, and other appropriate relations, and to bear a ſtrong analogy to a bitter matter, which exiſts, diſtinct from every other, in ſome vegetables,

vegetables, as the wood of the quaſſia amara. It may not improperly be denominated, the author thinks, the animal bitter principle.

The diſeaſes which depend on the ſtate of the liver may be divided into ſuch as affect the ſtructure of its ſubſtance, or of its appendages; and ſuch as conſiſt of a morbid alteration of the fluid it ſecretes, either in quantity or quality, or in a derangement of its natural courſe. In the preſent inquiry the two laſt alone are conſidered, viz. thoſe diſeaſes which ariſe from the ſtate or altered courſe of the bile, including jaundice, cholera, and biliary concretions.

The experiments of the author on theſe concretions lead him to ſuſpect, that the difference between biliary concretions and bile depends merely upon the relatively increaſed proportion of oxygen in the latter. 'The concretion,' he obſerves, 'after having been ſubmitted to the agency of nitric acid, was eſſentially altered in its characters, and brought into a ſtate much more nearly reſembling that matter which is in bile, combined with ſoda. It had become ſoluble in alkali, with the aſſumption of ſome bitterneſs of taſte, and of the peculiar colour of bile, in which relations to the ſame agent it had not previouſly ſtood. The nitric acid, too, had been deprived of a certain portion of its oxygen, for its previouſly white fumes were then converted into orange ones. Independent of this alteration of the acid, the analogy of other phenomena would lead us to the belief that the matter had received a larger portion of this particular principle. The tendency of every ſubſtance to combine with alkalies ſeems to increaſe in proportion to the quantity of oxygen with which they are combined. In the bleaching of linen, for inſtance, this combination is effected before alkalies can act upon or diſſolve the colouring particles, as the uſe of the oxy-muriatic acid, and the effects it produces, have moſt deciſively eſtabliſhed.

 'But,

'But, even if the fixation of oxygen be admitted, it may be aſked, whether this be all the change which takes place, and whether the baſe remains unaltered, except in this one particular? If this was all, it ſeemed probable that the oxygenation of this ſpecies of biliary concretion ought alſo to be effected by other, and perhaps by more ſimple and ſatisfactory methods, as by the uſe of oxy-muriatic acid, or its combinations; and this idea would alſo, perhaps, be favoured by conſidering that the original matter is inflammable, and the altered matter not ſo.

'With this view I nearly filled a ſmall bottle with oxy-muriatic acid, and added thereto a few grains of this concretion: in order to aſſiſt the decompoſition of this acid, I expoſed it to a ſtrong light, which is found, under other circumſtances, to be ſtrikingly favourable to the transfer of its oxygen, and continued the expoſure for three days: the acid was altered; it had loſt its ſuperabundance of oxygen, and had become common muriatic acid; but this liberated oxygen did not appear to have combined with the matter of the concretion, which was not more ſoluble in alkali than before, or altered at all in its relation to ether, alkohol, or other ſolvents of it.

'As a difference of temperature might conſiderably influence the affinities of theſe ſeveral principles, I triturated a ſmall portion of this concretion, ſo as to mix it intimately with oxy-muriat of potaſh, and then, having added a ſmall quantity of water, expoſed the mixture to 212°, for a conſiderable time, without apparently effecting this alteration. Another portion of the ſame mixture was left expoſed to light for ſeveral weeks, but this transfer of oxygen had not taken place.

'It was farther deſirable, upon the ſame principle, to try the converſe of the former experiments, to endeavour to deprive bile of its oxygen, and ſee whether it was by this means changed into a matter reſembling its concretions. For this purpoſe I mixed bile with water,

water, impregnated with hydro-ſulphure, under various circumſtances and temperatures, but without ſucceſs. There was, after long ſtanding, ſome precipitation of thin films, but it did not ſeem to be analogous to the matter of concretions.

'Upon the whole, therefore, there are many reaſons why we ſhould be cautious in admitting the concluſion, that the difference between biliary concretion and matter of bile depends ſolely upon the relatively increaſed proportion of oxygen in the latter. If other animal matter did not ſtand to nitric acid in a very ſimilar relation, if other leſs ſuſpicious modes of adding oxygen produced the ſame effect, or if its abſtraction left any thing like concretion, the theory would be perfect; as it ſtands here, it is very deficient; but ſtill it correſponds ſo well with various ſtrong analogies, and ſo ſtrikingly explains all that we know of its production and cure, that, though I may be condemned for the adoption of a haſty and unfounded opinion, I cannot help preſſing it as a point ſtill deſerving future conſideration.'

The following remarks on the manner in which a ſedentary life may be ſuppoſed to operate in favouring the production of gall-ſtones, merit attention.

'The chief circumſtance which ſeems to determine the formation of biliary concretions is a life of indolence and inactivity; it matters not whether it has been paſſed amidſt the luxuries of greatneſs, or the hardſhips of poverty; and, if it be more common in the former, it is, perhaps, becauſe neceſſity compels the ſubjects of the latter to more perſonal exertion. This appears to be a point of univerſal conſent. They are comparatively much more frequent in women than in men, and in either ſex, eſpecially in thoſe who have paſſed the middle and active period of life. Haller noticed the frequency of their occurrence in criminals, whoſe death had been preceded by long confinement. They are often found in the gall-bladders of oxen, which have been ſtalled during the winter months; and

I have

I have reaſon to believe, that they occur in a larger than common proportion of maniacs, who have been long confined.

'What, then, are the particular circumſtances of ſuch a mode of life, and how can they be ſuppoſed to operate in the formation of biliary concretions? It implies not only a want of exertion of the muſcular powers, which are obedient to the will, but alſo leſs action of the involuntary ones. The contractions of the heart and arteries are made more ſlowly, while exerciſe may increaſe them ſo as to be almoſt countleſs. The reſpiration is much leſs frequent, and a leſs proportion of oxygen gas is expended by an animal in a ſtate of quietude. The relative ſituation of the liver to the diaphragm, and its participation in the motions of it during reſpiration, is another circumſtance alſo by which it is very probable that its ſecretions are affected. From the experiments upon theſe concretions with nitric acid, I would again repeat, that no concluſions can fairly be drawn as to any morbid alteration which takes place in an animal body, but if it can be ſuppoſed to act ſimply by ſupplying oxygen by its decompoſition to the matter of concretions, and thus to bring it nearer to that which is combined with alkali to form bile, it may be aſked, whether the deficiency of oxygen in the ſyſtem may not, perchance, occaſion the ſecretion of a matter containing leſs, and which cryſtallizes, inſtead of a matter containing more, and which is, by this means, rendered ſoluble in alkali.

'It is probable that climate, and its attendant circumſtances, have a conſiderable influence upon this morbid alteration. As far as I have been able to aſcertain, it muſt be a very rare diſeaſe indeed in hot countries, though the inactivity connected with them might ſeem, at firſt ſight, likely to render it frequent. The bile there has a tendency to run into a different ſtate of alteration. The antients appear to have known little of it; with us it is extremely common.

Haller

Haller mentions it as remarkably ſo in ſome parts of Germany; and, as far as can be judged from the number of caſes recorded, it muſt likewiſe be frequent in France; but there does not, upon the whole, appear to be ſufficient foundation for any general opinion upon this point at preſent.'

ART. XXXVIII. *Handbuk der Botanik, &c.* i. e. *A Manual of Botany, for the Uſe of Phyſicians and Amateurs.* *By* C. F. LUDWIG. Octavo, 584 pages, with four plates, price 2 rix-dollars. Leipſic, 1801.

THE preſent work is deſtined to the uſe of thoſe about to commence the intereſting ſtudy of botany; it is divided into two principal parts, one of which comprehends what is termed the theory, the other the practical part, of the ſcience.

In the firſt ſection, after having given a definition of a plant and its different parts, and pointed out its conſtituent principles, and the characters, organical and chemical, which diſtinguiſh it from the animal kingdom, the author gives an idea of the natural families, and enters into a minute analyſis of the fluid and ſolid parts of vegetables, and the different properties of the juices which they furniſh. He then deſcribes their particular organs, the functions they ſerve to fulfil, and the diſorders to which they are liable; forming thus a complete treatiſe of the phyſiology and diſeaſes of plants. Laſtly, he paſſes on to the terminology, and preſents us with a view of the different ſyſtems.

The ſecond part of the work contains the deſcription of the principal plants, according to the Linnean ſyſtem; their characters in the Latin language, and an indication of the works where they are to be found beſt figured. Some remarks, alſo, are made on their

their uſes. In an appendix the author gives directions for the proper choice of a botanical library; followed by a hiſtory of the ſcience, containing the names of the moſt diſtinguiſhed botaniſts, in chronological order, with an ample table of contents.

The firſt plate repreſents the ſimple ſolid parts of plants; the others ſerve to explain the Linnean mode of claſſification.

Art. XXXIX. *De la Chaleur Animale, &c. Of Animal Heat, and its various Relations; founded on a new Explanation of the calorific Phenomena, with an Examination of the Opinions of different modern Writers on the ſame Subject. By* F. Josse, of Rennes. Paris, 1801.

IN a preliminary diſcourſe, the author points out the method purſued in treating the ſubject of his work. Having paid a juſt tribute of applauſe and regret to the celebrated but unfortunate *Lavoiſier*, he inquires, firſt, what is underſtood by the terms *light* and *caloric*, and afterwards cites, from *Lavoiſier*, the principal part of his theory reſpecting the properties of caloric, and its different modes of acting. According to the Lavoiſerian doctrine, caloric exiſts in all bodies, either in the looſe ſtate, or in that of combination. In the latter caſe, it is inſenſible, latent, not at all affecting the temperature of bodies, but influencing ſolely their ſtates of ſolidity, fluidity, or gas. In the former, it is merely diffuſed amongſt the molecules of bodies, and conſequently remains free in their interſtices; is ſenſible, thermometrical, does not affect their ſolidity, but only their temperature. Theſe principles being admitted, the author concludes from them, that ſolids do not become liquid or gaſiform, but in proportion to the quantity of caloric combined with them; that the ſenſation of cold is produced by the

the paſſage of free caloric into the ſtate of combination, where it remains latent; and, on the other hand, that ſolidification is owing to the ſucceſſive loſs of caloric, which, in paſſing from the ſtate of mixture to that of combination, had become latent; a loſs which neceſſarily produces heat by the portion of combined caloric thus ſet at liberty.

Theſe general principles being conſidered as eſtabliſhed, the author applies them phyſically to animalization, and endeavours, by their aid, to account for the production of animal heat. With this view, he examines the relation of animal heat to the proceſs of digeſtion; and, on the principle of liquefaction above ſtated, he explains the chillineſs which takes place during the time that the food in the ſtomach is paſſing from the ſolid to the fluid, and, ſometimes, the gaſeous ſtate. He afterwards ſhews, that the plaſtic effects of nutrition ought to produce heat, by the condenſation of the nutritive juices, which, paſſing from the fluid to the ſolid ſtate, effect the reparation of organic bodies.

The author, in the next place, enters into a phyſiological diſcuſſion reſpecting the blood and reſpiration, in which he endeavours to refute the generally received opinion of the *diſ-hydrogenation* and *de-carbonation* of the blood in the lungs. He oppoſes here the experiments of Dr. *Goodwin* on living animals, to the opinions maintained in the late works of *Fourcroy* and *Bichat* on the ſame ſubject; and endeavours to prove, that the water and carbonic acid found in expiration do not proceed from a direct diſ-hydrogenation and de-carbonation of the blood in the lungs, but are furniſhed chiefly by the pulmonary tranſpiration ariſing from the conſumption or waſte of the organs, which takes place here as in all the other parts of the body. He ſuppoſes that the cheſt is not the primary ſource where the heat is animalized, that is, identifies itſelf with the animal, in order to its diſtribution through the body, by means of the arterial ſyſtem; but that the

the functions of the lungs are confined, 1st. to the oxygenation of the blood, in order to contribute to the excitability of the irritable parts; to the divers animal oxygenations continually going on; and to the introduction of the azote of the atmosphere into the system. 2d. To the emission of the substances consumed by the living actions, along with those parts of the air which have not served the purposes of animalization.

The author treats subsequently of the influence of different temperatures on animated beings, and on the effects which result from the action of caloric on the fat, in respect to nutrition and transpiration. Some hypotheses are suggested on the formation of the lymph, which, according to him, may be regarded as a chylous substance, adapted to the purposes of sanguification.

Art. XL. *Observations on the Increase and Decrease of different Diseases, and particularly of the Plague. By* William Heberden, *jun. M.D. F.R.S.* Quarto, 96 pages, price 5s. London, 1801. Payne.

'PEOPLE,' the author observes, 'have fallen into two opposite errors concerning the bills of mortality. Some have considered their authority as too vague to be made the foundation of any certain conclusions; and others have built upon this foundation, without sufficiently considering its real defects. Both parties are equally in the wrong.

'The agreement of the bills with each other does alone carry with it a strong proof, that the numbers under the several articles are by no means set down at random, but must be taken from the uniform operation of some permanent cause; while the gradual changes they exhibit in particular diseases correspond to the alterations which are known in time to take place.

place in the channels through which the great stream of mortality is constantly flowing.

'That there are, however, many and very great imperfections in the bills of mortality, cannot be doubted; for, first, the births include only those who are baptized according to the rites of the church of England. By which means, all Jews, Quakers, Papists, and the very numerous body of Dissenters, are omitted. And though some among the poorer sort, both of Papists and Dissenters, who live at a distance from their respective burial-grounds, and cannot bear the expence of being carried thither, are buried according to the rites of the established church, and consequently have a place in the register; yet the numbers so accounted for must be very few, compared with the deficiencies.

'Secondly: Of those who are of the church of England, a very large proportion are either buried in the country, or in burial grounds adjacent to London, but without the bills. The burials also in St. Paul's Cathedral, in Westminster Abbey, the Temple, the Rolls, Lincoln's Inn, St. Peter's in the Tower, the Charter House, the several hospitals in the metropolis, and other places which are not parochial cemeteries, are for that reason omitted. Besides which, the great parishes of Marybone and Pancras have never yet had a place in the bills of mortality. In the former of these alone, the burials, on an average of five years, from 1795 to 1799 inclusive, amounted annually to 1550 *.

'Thirdly: Many abortives and still-born, making together above 700 in the year, are noticed in the deaths, but not in the births.

'Fourthly: The mistakes and misrepresentations to which the particular diseases are liable, are too ob-

* Mr. Pennant, in his account of London, says, it is the opinion of Mr. Richardson, who has served the parish-offices, that there are nearly as many buried from London, at different burial-grounds, without, as within, the limits of the bills of mortality.

vious

vious to be infifted upon; yet it deferves to be repeated, that, even in thefe fmaller divifions of the fubject, the correfpondence of one year, and of one week, with another, is fuch as muft convince every attentive obferver that a confiderable degree of credit is due to their report.'

The juftice of thefe remarks, we apprehend, will be generally allowed. If the very carelefs and inaccurate manner in which bills of mortality are ufually kept render them inadequate to the attainment of precife and minute conclufions on particular points, they muft be allowed to admit of many important general deductions, and, with the cautions and explanations here fuggefted, are no doubt applicable to very valuable purpofes in fcience and domeftic œconomy. It is to be lamented that no attempts have been made to introduce a better mode of framing bills of mortality, fo as to free them from the objections which they are at prefent liable to: fuch an attempt might, without much difficulty, be made, and could not fail of leading to highly ufeful confequences.

Table I. contains an account of the annual chriftenings and burials in London, for each year of the eighteenth century; together with the proportion out of every thoufand who have died by bowel complaints, fmall-pox, palfy, meafles, or child-birth: extracted from the bills of mortality.

Table II. confifts of ten different articles extracted from the London weekly bills, fhewing their variations every week for ten years. By thefe two tables, the fluctuation obfervable in certain difeafes in different years may be afcertained; and, likewife, that which takes place in different parts of the fame year. The obfervations on the different articles which follow are highly interefting as well to the political as the medical philofopher. Without following the author too minutely, we fhall notice the principal refults, and the remarks which accompany them.

The

The annual mortality appears by the pariſh clerks' returns to have increaſed from the beginning of the century to the year 1720; to have been at its greateſt height from 1720 to 1750; and from that time gradually to have decreaſed. A nearly ſimilar fluctuation may be obſerved in the chriſtenings; and both of them may be in great meaſure accounted for, the author thinks, in conſequence of people being leſs crowded in their habitations; many merchants, with their families, and many merchants' clerks alſo, who uſed all to live in the ſame houſe, now retiring, eſpecially when they are ſick, to others ſituated without the limits of the bills of mortality, or at leaſt without the city.

But there is ſcarcely any fact, the author obſerves, to be collected from the bills of mortality more worthy the attention of phyſicians than the gradual decline of the dyſentery. In the ſeventeenth century, the number of deaths under the title of *bloody-flux* and *griping in the guts* appear never to have been leſs than 1000, and in ſome years to have exceeded 4000; and for five-and-twenty years together, from 1667 to 1692, they every year amounted to above 2000. But from the beginning of the eighteenth century things were materially changed. After the year 1733, the article of *griping in the guts* was joined to that of colic: taking, then, the three diſeaſes of *bloody-flux*, *colic*, and *gripes*, we may obſerve their decreaſe to be nearly as follows:

From	1700 to 1710	the average is about	1070 annually.
	1710 to 1720	——	770
	1720 to 1730	——	700
	1730 to 1740	——	359
	1740 to 1750	——	150
	1750 to 1760	——	110
	1760 to 1770	——	80
	1770 to 1780	——	70
	1780 to 1790	——	40
	1790 to 1800	——	20

Even

Even in the years 1762 and 1780, when modern phyſicians have deſcribed the dyſentery as epidemical in London, the amount of the ſame three articles was in the firſt year only 209, and in the laſt 93.

The cauſe of ſo great an alteration in the health of the people of England (for it is not confined to the metropolis) the author attributes to the improvements which have gradually taken place, not only in London, but in all great towns, and in the manner of living throughout the kingdom; particularly with reſpect to cleanlineſs and ventilation.

With regard to inoculation it is obſerved, that, however beneficial the practice may have proved to individuals, and to the nation at large, the bills of mortality inconteſtibly prove, that in London more perſons have died of the ſmall-pox ſince its introduction than before. Out of every thouſand deaths, the number attributed to the ſmall-pox, during the firſt thirty years of the eighteenth century, before inoculation could yet have had any effect upon them, amounted to ſeventy-four. During an equal number of years at the end of the century, they amounted to ninety-five: a proportion of above five to four. The cauſes are ſufficiently obvious.

It appears, that, from the beginning of the eighteenth century, the proportion of deaths from apoplexy, palſy, and ſuddenly, has been gradually and conſtantly increaſing; and it now above double what it was an hundred years ago. The cauſes which have been aſſigned are, intemperance in the uſe of ſpirituous liquors, tea, &c. but the author is not ſatisfied of their truth.

The following table gives a comparative view of the mortality occaſioned by certain diſeaſes, at the beginning, middle, and end of the eighteenth century.

	Beginning.	*Middle.*	*End.*
Abortive and ſtill-born	600	570	750
Colic, flux, gripes, &c.	1100	135	20
Conſumption	3000	4000	5000
Dropſy	850	900	900

Evil

	Beginning.	*Middle.*	*End.*
Evil	70	15	8
Fever	3000	3000	2000
Gout	26	40	66
Lunatic	27	75	70
Palſy, apoplexy, &c.	157	280	300
Rickets	380	11	1
Small-pox	1600	2000	2000

‘ The view which preſents itſelf of conſumptions, gout, lunacy, and palſy, muſt be confeſſed,’ the author obſerves, ‘ to be by no means favourable. The firſt of theſe probably includes many other chronical diſtempers, beſides the pulmonary conſumption, All of them ſeem to be almoſt, if not altogether, unknown among barbarous nations, and may perhaps be the natural conſequences of arts and civilization. As theſe again ſhoot up into luxury and intemperance, theſe effects may well be expected to become proportionally more conſpicuous. Dr. *Ruſh* of Philadelphia has reported, concerning the uncultivated nations of North America, that fevers, inflammations, and dyſenteries, make up the number of their complaints; and, in particular, “ that after much inquiry he had not been able to find a ſingle inſtance of madneſs, melancholy, or fatuity, among them *.” In a ſubſequent part of his work, the ſame author, ſpeaking of the pulmonary conſumption, declares it to be “ unknown among the Indians of North America †.” Likewiſe Mr. *Park*, in his Account of the Interior Parts of Africa, ſays, that, notwithſtanding longevity is uncommon among the Negroes, their diſeaſes appeared to be but few in number: fevers and fluxes are the moſt common, and the moſt fatal.

‘ The diſcerning Sydenham had long before obſerved, that “ acute diſeaſes come from God, but chronical diſeaſes originate with ourſelves ‡.” Indeed, we cannot doubt that idleneſs and intemperance,

* Medical Enquiries and Obſervations, by B. Ruſh, Vol. I. p. 25.
† Vol. I. p. 159.
‡ Morbi acuti Deum habent autorem, chronici ipſos nos.

with their long train of vices; that covetouſneſs and anxiety, the neceſſary attendants upon commerce; and manufactories, which ſupply the materials for it, muſt all in their ſeveral ways be injurious to health; and it is not improbable, that they may very largely have contributed to ſwell out the number of deaths under each of the diſeaſes in queſtion.'

The whole number of deaths appears to be greateſt in January, February, and March; and leaſt in June, July, and Auguſt. This is contrary to the received opinion, but is confirmed by the regiſters of many other cities and towns in the kingdom, by thoſe of Edinburgh, Paris, and the whole of Sweden. On the other hand, in the ſouth of Europe, and in warm climates in general, the autumn appears to be the moſt fatal ſeaſon of the year.

Under twenty-ſeven years of age, there die moſt either in January, February, and March, or elſe in September and October. But there are more children born in the beginning of the year, than in the ſubſequent parts of it: the autumn, therefore, may be looked upon as the ſeaſon more eſpecially prejudicial to young children. It is at this time that bowel complaints are moſt prevalent in perſons of all ages; and when it is conſidered how large a part they conſtitute of the diſeaſes of infants, it ſeems by no means improbable, that the general cauſe ſhould be capable of producing this particular effect.

Of thoſe aged above ſixty years, by much the greateſt number die in the coldeſt months, and the feweſt in the middle of ſummer. There can be little doubt, the author obſerves, that this ought to be attributed to the degree of cold; for, univerſally, old people, above all others, are moſt affected by it. In this reſpect, they differ greatly from children.

The number of deaths by palſies and apoplexies is in this country always greateſt in winter. At Marſeilles, on the contrary, they are greateſt in the ſummer.

mer. The number of deaths from conſumptions are, likewiſe, always greateſt in the cold months.

'From the weekly table of mortality we are enabled to correct ſome popular errors, which are very generally prevalent. One of theſe is, that there is ſomething peculiarly wholeſome in a ſharp froſt*; another, that wet weather is noxious to the human body, and in particular that it is productive of putrid diſeaſes. After what has been ſtated above, and what may be ſeen more at large in the Philoſophical Tranſactions for the year 1792, there need not many arguments to diſprove the firſt of theſe opinions. The year 1797 affords a very favourable opportunity of aſcertaining that the other is equally unfounded. That year, from the middle of May, was one of the wetteſt ever remembered; yet, ſo far was this from rendering it prejudicial, much leſs peſtilential, that, whether we attend to the united ſum of the deaths, or to the particular articles of which it is compoſed, we ſhall find reaſon to believe it was in every reſpect a healthy year. The ſame was obſerved alſo during the American war among the ſoldiers encamped at Coxheath, in Kent; and it has occaſionally been noticed at other times. The miſtake has in both caſes probably originated from the known influence of heat and moiſture in promoting putrefaction, and they are not the only inſtances of people being miſled by a name. But the cook and the chemiſt ſhould be informed, that experiments drawn from a kitchen or a laboratory muſt not be too confidently transferred to the operations of a living body.

'There is reaſon to think that another idea has been adopted by many people upon not much better grounds than the former; for it has been imagined, that neither heat, nor cold, are in themſelves perni-

* Agreeable to this is the proverb, that "A green winter makes a fat church-yard." See *Ray*'s Proverbs.

 cious,

cious, but that it is the rapid tranſitions from one to the other which alone are to be dreaded. If this opinion carry with it an appearance of probability, ſuch facts at leaſt as are afforded by the bills of mortality at the end of the year 1796 and beginning of 1797 do in no wiſe correſpond with it. The great and ſudden changes of temperature at that period are too recent to be forgotten. Before the middle of December 1796 it froze hard for ſeveral days, and preſently after thawed again: Chriſtmas morning will long be memorable for the greateſt cold perhaps ever experienced in England, Fahrenheit's thermometer in London ſtanding below zero; but in leſs than a week the ſame thermometer was above 50°. The month of January following continued to exhibit frequent and uncommon variations of heat and cold; yet the mortality at this time did not exceed its uſual limits.

'The ſame opinion has been very commonly applied to the breaking up of a long froſt; people in general being more apprehenſive of bad conſequences from the ſucceeding thaw, than from the cold itſelf. But this admits of a ſimilar anſwer to the former; for the froſt in the beginning of the year 1795 ended with the month of February, though the weather continued indeed to be colder than uſual throughout the March following. We need only turn our eyes to the weekly table, to ſee how accurately this correſponds with the decreaſe of the mortality.'—The ſame effects took place during the ſevere winter of 1739-40.

The ſecond part of the work treats ſolely of the *plague.* This diſeaſe, which was once ſo very deſtructive in this country, has totally diſappeared for conſiderably more than an hundred years: the author here inquires by what means this has happened. Many difficulties, he obſerves, occur in the proſecution of this inquiry. Each country is unwilling to acknowledge herſelf the parent of ſuch an odious offſpring. From this part of Europe we are taught to look to Turkey for the ſource of this evil. Enquire

there,

there, and you are referred either to fome vague re-report from parts about the Cafpian fea, or more commonly to Egypt. The Egyptians, on the other hand, will tell you they receive it fometimes from Turkey, but ufually from Lybia, or Ethiopia; in fhort, from places where there is nobody to contradict fuch a malicious report. In this manner *Villani*, who was at fome pains to inveftigate the origin of a great plague in the fourteenth century, was referred at laft to China, and was told that it was there occafioned by the burfting of a great ball of fire, attended with an uncommon ftench. Leaving thefe idle ftories, if we direct our attention where in fact it has prevailed, we fhall find its head-quarters always to have been the naftieft parts of dirty, crowded, ill-conftructed, large cities; and its firft appearance has always been among the loweft of the people. In London, the plagues of 1626 and 1636 broke out at White-chapel, a part of the town that abounded with poor, and with flaughter-houfes: that of 1665 is faid to have broke out firft in St. Giles; and there it would probably again break out, if ever we fhould fuffer fuch another calamity.

'The plague, therefore, as well as other putrid difeafes, prevailed in a very high degree in times when we know the condition of the town to have been moft offenfively dirty; and it is pleafing to obferve how the health of the inhabitants returned, in proportion as this caufe of their complaints was removed. In September 1666, while the plague was yet unfubdued, happened the memorable fire of London. It raged for feveral days together, till it had confumed every thing from the Tower to Temple Bar. This, which was at firft looked upon as a fcourge from Heaven, has fince proved, indeed, a moft gracious bleffing. Great pains were taken, and much encouragement was given by the king to obtain proper plans for rebuilding the city. The ftreets were widened; the fign-pofts ordered to be "fixed againft the balconies, or fome other convenient part of the houfe,"

 inftead

inftead of hanging acrofs; directions were prefcribed for levelling the ftreets, "for the more eafy and convenient current and conveyance of the waters;" proper places were appointed for common layftalls; ceft-pools were ordered to be "made and conftructed to every grate of the common fewer, to receive the fand or gravel coming to the fame, fo as to prevent the choaking thereof;" orders were iffued refpecting the "fellowfhip of carmen, who fhould fweep and cleanfe the ftreets, lanes, and common paffages, from dung, foil, filth, and dirt;" all perfons were forbid to lay in the ftreets any "dogs, cats, inwards of beafts, cleaves of beafts' feet, bones, horns, dregs or drofs of ale or beer, or any noifome thing, upon pain of ten fhillings for every offence:" it was ordered, alfo, "that no man fhall feed any kine, goats, hogs, or poultry, in the open ftreets;" "that no man fhall caft into ditches or fewers, grates or gullets, of the city, any manner of carrion, ftinking flefh, rotten oranges or onions, rubbifh, dung, &c. &c.;" that no man "fhall make or continue any widraughts, feat or feats for houfes of eafement over, or drains into, any common fewers, &c." And other regulations were enforced to the fame effect (fee *Maitland's Hiftory of London)*; by which means many of the former inconveniencies and nuifances were remedied; fo that in a few years the new town rofe up, like a phœnix from the fire, with increafed vigour and beauty. Nor did the benefit end there; for it produced in the country a fpirit of improvement, which had till then been unknown, but which has never fince ceafed to exert itfelf.'

The decline of fcurvy, a difeafe which formerly prevailed much in London, and which the author attributes to the fame putrid ftate of air, is equally remarkable. From fixty deaths annually from this fource, the number is now reduced to five or fix.

At the time the plague was fo deftructive in England, it feems to have raged with equal violence in other

other parts of Europe; and probably from the ſame cauſe. The hiſtories of thoſe ages are full of the phyſical and political miſeries which prevailed; and in proportion as the nations of Europe have become civilized, and agriculture, with the arts of peace, have been cultivated, this diſorder has gradually diſappeared.

It is obſervable, that, at its firſt breaking out, the diſeaſe has never been known to be the plague. It has, moreover, generally been preceded by a ſevere putrid fever. This was the caſe at Nimeguen in 1635, at London in 1665, in Holſtein in 1764, and at Moſcow in 1771. It is from conſiderations like theſe, the author remarks, and from the ſimilarity of the circumſtances under which both are found to prevail, that the plague has been thought by many to be nothing more than a high degree of putrid fever. The difference between them ſeems to conſiſt in this; that the one is more infectious, is generally attended with buboes and carbuncles, is quicker in its progreſs, and more frequently fatal. But it muſt be obſerved, that this diſtinction is applicable only to the general courſe of each diſeaſe, and not to particular caſes; for there ſtand recorded inſtances of other fevers which have ſeemed, even in theſe reſpects, to fall little ſhort of the true plague.

'In many reſpects, then,' the author adds, 'there muſt be allowed to ſubſiſt a ſtrong reſemblance between theſe diſeaſes. The authors of the *Traité de la Peſte* declare, "Nous pouvons même avancer hardiment, qu'on y reconnaitra facilement le caractere "des fievres malignes les plus ordinaires; du moins "leur rapidité et quelques accidens ſeront les ſeules "choſes qui diſtingueront ces fievres de la peſte." Their affinity may perhaps be compared to that which a common ague bears to the remittent fever. And if an accumulation of the cauſes of putrid fever cannot produce a plague, at leaſt it ſeems capable of producing

ducing a prediſpoſition to it, where the leaven of the plague, however introduced, preſently exalts the reigning fever into its own nature; ſuperadding its proper characteriſtic ſymptoms to ſuch as are common to both diſeaſes. Conformably to this notion, Diermerbroeck takes notice, " Si quiſquam alio quodam morbo corriperetur, intra viginti quatuor horis peſtis illi morbo adjungebatur, ita ut toto anno vix ullus morbus peſte incomitatus viſus fuerit." We have aſſurances that ſome complaints have in this manner been engrafted, as it were, upon the ſtock of previous diſeaſes. " In autumn 1757, ſeveral ſoldiers " were brought into the hoſpital at Portſmouth with " a diſorder compounded of the autumnal and jail " fever; for when thoſe men, upon being ſeized with " the common fever of the ſeaſon, were confined to " the holds of the crowded tranſports, their diſtempers " aſſumed that form." *(Pringle's Army Diſeaſes).* So upon admitting into an hoſpital one perſon with a flux, ſeveral other patients in the ſame ward have had this ſymptom added to their other complaints (Lind *on Fever and Infection).* And Dr. Blane has obſerved, generally, that, ſuppoſing a ſhip's company be prediſpoſed to acute diſtempers, and one man or more ill of a dyſentery be brought on board, this will become the prevailing diſeaſe *(Diſeaſes of Seamen).* Sydenham's works abound with inſtances of the ſame kind; as, where he is ſpeaking of an epidemical cough, " Veruntamen qualiſcunque fuerit febris ſtationaria, " quæ illum annum funeſtat, atque per id temporis " dominatur, nova hæc febris ſtatim in ejus nomen ac " familiam adoptatur, ejuſdem ubique genio obſe- " quens, licet ſymptomata quædam adhuc retineat, " a tuſſi, quam habuit parentem, pendentia."

' We have ſhewn, then, that the ſtreets of London were formerly very cloſe, and dirty, and the houſes within very ſlovenly: we have ſhewn, alſo, in a former part of this eſſay, that the inhabitants lived crowded together, probably not leſs than twice as

many

many in the same space they occupy at present. By pointing out the diseases which prevailed in those times, we have shewn what influence this state of things appears to have had upon the health of the people; and how the effect, and the cause, have declined together: we have shewn, from the testimony of eye-witnesses, how nearly the plague is allied to these other diseases; how common it was at the same time with them; and how it has also disappeared with them: we have shewn, moreover, that the presence of infectious matter is not alone sufficient to make the disease epidemical; but that some concurrent state of the air, and of the human body, is likewise necessary. I flatter myself, therefore, we shall be justified in drawing this conclusion: that one long exemption from the plague is not so much to be attributed to any accidental absence of its existing causes, as to our own change of manners, our love of cleanliness, and ventilation, which have produced amongst us, I do not say an incapability, but a great unaptness, any longer to receive it.'

Art. XLI. *An Essay on the Proximate Cause of Animal Impregnation, being the Substance of a Paper read and discussed in the Medical Society of Guy's Hospital, in October* 1799. *By* John Pulley, *of* Bedford, *Surgeon.* 4to, 31 pages, price 2s. London, 1801. Cox.

THE object of the author in the present Essay is to overturn the theories of generation which attribute the procreative faculty to one or other of the sexes exclusively, and to insist on a joint action of the two. The following is a summary of the theory which he deems the most probable.

'Impregnation I believe to be effected by the seminal fluid of the male having actual contact with the contained

contained matter of the ovum, or vesicle, of the female; and such contact I regard as the almost instantaneous consequence of the ejection of the semen from the male. The ingenious Dr. Smellie, and others, have conjectured, that the semen may be carried to the ovaries by an absorbent action; and if we reflect on the great power and velocity of absorption, we shall be here led to acknowledge the utility of its agency. The late Mr. Cruickshank, in his incomparable work on the absorbent system, has proved by experiment that the lacteal vessels are capable of conveying their contents the distance of four inches in a single second; so that, allowing to the uterine system the power of absorption, and supposing (to avoid scanty measure) that the semen has full two feet to be conveyed, it would attain that distance in the space of six seconds; and on substracting three-fourths of the velocity in absorption, we should still find the important work completed in less than half a minute! But, having admitted all this, we are told that the fimbriated extremity of the fallopian tube does not embrace the ovary during coition, or for many succeeding hours; this is asserted, but who has proved that the fimbriæ do not envelope the ovary, or a part, during the continuance of sexual intercourse? It is futile, indeed, to say that they are not in contact with it at that moment, because the fallopian tube is found in its usual situation a few minutes after coition: it might as well be argued, that the penis of a man is not erect in the plenitude of venereal pleasure, because it is found drooping a few minutes after consummation! But at what period is it most likely that the fimbriæ should embrace the ovary? I believe it is generally admitted that the peristaltic motion of the fallopian tube is most active when the vascular turgescency of the uterine system is most conspicuous: this has been proved by experiments on rabbits highly disposed to receive the male, even where no sexual intercourse has been permitted, and in such the fimbriæ have been found tightly embracing the ovaries.

ovaries. Every one muſt know how high, how exquiſite, are the ſenſations of animals in the moment of coition; how "tremblingly alive to the keen impulſe "of deſire! The whole frame pants furious," and is hurried on, as it were, by irreſiſtible convulſions: while, then, the whole body is ſo animated, and the circulation in general ſo quickly excited, we muſt expect that the uterine ſyſtem, to where the operations of nature are then directed, muſt largely at that moment partake the diſpoſition to excitement; and ſo it is found to do: the whole link of the procreative parts, from the vagina to the ovaries, is loaded with blood, and wears the appearance of the higheſt irritation. At ſuch time, then, it is reaſonable to conclude that the fimbriated extremity of the fallopian tube invariably embraces the ovary, and remains there fixt until the ſemen is applied to the ripening veſicle, which may be effected by the cloſe of copulation.

'It is no matter of aſtoniſhment that the fallopian tube ſhould reſume its uſual ſituation a few minutes after coition: with the end of copulation, ends the motive to excitement; languor is the conſequence; it pervades the whole ſyſtem, and conſequently thoſe effects depending on excitement are no more. After impregnation, for a while the ſilent operations of nature appear as at a pauſe, and the embryo of future man tarries in the ovary till its evolving habitation is prepared for its reception: ſuch proceſs occaſions new excitement, freſh determinations of blood are conſequently effected, and the fimbriæ are recalled to embrace the embryo, and conduct it to the uterus.'

ART. XLII. *The Doctrine of Phlogiſton eſtabliſhed, and that of the Compoſition of Water refuted. By* JOSEPH

JOSEPH PRIESTLEY, *L.L.D. F.R.S. &c. &c.* 8vo. 90 pages, price 2s 6d. Northumberland in America, 1800.

DR. *Prieſtley* ſtands now almoſt ſingle in his defence of the *Stahlian* doctrine of phlogiſton, and, as long as his diſſent is the reſult of conviction and deliberate inquiry, no poſſible objection can be made to the pertinacity with which he adheres to old opinions. He has heard, he obſerves, all that can be urged in favour of the new theory, from its ableſt advocates, both here and in America, and thinks it far from being ſufficient for its ſupport. In the work before us is republiſhed all that he thinks of importance in the queſtion, contained in former publications; and it is preſented to the public *as a demonſtration of the doctrine of phlogiſton*, and a complete refutation of that of *the compoſition of water.* This language will probably be deemed too confident, and by no means adapted to a ſubject depending for its eſtabliſhment on facts which the parties are by no means agreed on. The experiments on the different ſides of the queſtion are often at variance with each other, and lead to oppoſite concluſions. All reaſoning from facts not yet fully admitted ſhould be received with caution.

The author divides his work into eleven ſections. In the firſt, he endeavours to prove, from the ſolution of iron in the vitriolic and marine acids, that metals are compound ſubſtances, and contain phlogiſton.

2. That finery cinder is not a proper oxyd of iron, but a combination of water and iron.

3. That the inflammable air produced from finery cinder and charcoal heated together, is formed by the union of the water of the finery cinder with a portion of the charcoal, while the other part of this ſubſtance furniſhes phlogiſton to revive the metal.

4. That the flowers of zinc contain no oxygen, though during their preparation, when ſteam was made to paſs over the metal in an ignited ſtate, inflammable air was produced.

5. That

5. That ſulphur is formed by heating vitriolic acid in inflammable air, and by expoſing water, impregnated with vitriolic acid air, to a continued heat.

6. That as calces of mercury are reducible in inflammable air, which is abſorbed during the proceſs, and that metal reduced thereby, it muſt contain phlogiſton; and when calces of quickſilver are reduced without addition, the phlogiſton neceſſary for conſtituting the metal muſt paſs through the red-hot glaſs from without.

7. That the anti-phlogiſtian experiment of the decompoſition of water, by cauſing ſteam to paſs over red-hot iron, is utterly inconcluſive; and that when an electric ſpark is paſſed through a mixture of oxygenous and inflammable airs, not *water*, but *nitrous acid*, is inſtantly produced.

8. That the proportions of the elements of which water is ſuppoſed to conſiſt (fifteen of hydrogen and eighty-five of oxygen) do not accord with the reſults of experiments.

9. That the production of dephlogiſticated and inflammable airs, by taking electric exploſions and water, by *Trooſtwyck*, *Deimann*, and *Pearſon*, is the reſult of a very complex experiment; and, of courſe, the interpretation of it, to evince the ſolution of water into thoſe airs, very dubious; and that Mrs. *Fulhame*'s interpretation of her experiments is fanciful and fabulous.

10. That fixed air is formed without the preſence of carbon, and conſiſts of dephlogiſticated air and phlogiſton.

11. That phlogiſticated air is compoſed of dephlogiſticated and inflammable airs.

Such are the principles on which the author grounds his oppoſition to the new doctrines: the truth of them, however, reſts on facts and experiments which are far from being generally admitted. The doctrine of the *compoſition of water* runs a much greater riſk of being

being overturned by the late diſcoveries in galvaniſm, than by any arguments here furniſhed.

In an appendix (No. 1.) the author comments on an attempt made by Dr. *Mitchill*, of *New York*, to reconcile the phlogiſtians and anti-phlogiſtians, which, he obſerves, will hardly be admitted by either of the contending parties. For the former will not admit that water contains an inflammable principle, merely becauſe the blaſt of an eolipile will promote the burning of fuel; ſince, whenever this is the caſe, a current of *air* always accompanies the current of ſteam; and if this be prevented, the ſteam extinguiſhes the fire as effectually as cold water, or phlogiſticated air.

Nor, on the other hand, will the *anti-phlogiſtians* acknowledge, that even common ſulphur, phoſphorus, iron, or zinc, contain any hydrogen, which Dr. Mitchill makes ſynonymous to phlogiſton. And the *phlogiſtians* maintain, that, if theſe ſubſtances contain phlogiſton, they all muſt, and every metal, without exception, as gold, and others, which he thinks contain none; becauſe the calces, or baſes of them, all become theſe ſubſtances in conſequence of imbibing inflammable air; and becauſe either this air or nitrous air (which contains the ſame principle) is evolved whenever they are diſſolved in acids. In ſhort, he obſerves, the metals, as well as ſulphur and phoſphorus, are either neceſſarily ſimple ſubſtances, or neceſſarily and univerſally compounds; and water is either reſolvable into two kinds of air, or it is not: upon the deciſion of theſe queſtions the whole controverſy hinges.

App. No. 2, contains an aſſertion of the author's claim to the diſcovery of the emiſſion of dephlogiſticated air by the action of light upon plants, a diſcovery which is generally attributed to Dr. *Ingenhouſz*. From the ſtatement of the matter here given, we think his

his claim fairly eſtabliſhed. The ſeveral ſteps in the inveſtigation are thus pointed out.

'In 1772, I found that the growth of plants reſtored air vitiated by animal reſpiration. For this diſcovery chiefly I received the gold medal of the Royal Society; and Sir John Pringle, in his ſpeech on the occaſion, enlarged on my idea of one part of the creation being the means of repairing the injury done to the atmoſphere by the other. In 1778, being at Lymington, on the ſea ſhore, I found the air in the bladders of the ſea-weed to be much purer than that of the atmoſphere. In the ſame ſummer I found the air in which ſome plants had grown much purer than the external air, an effect which could not be aſcribed to any thing but the production of dephlogiſticated air. And it was at the cloſe of the ſame year, that, obſerving bubbles of air emitted by the green matter with which the inſide of my phials was covered, I examined it, and found it to be highly dephlogiſticated. Excluding the *light,* the production of air always ceaſed, though in the ſame degree of *heat;* ſo that the effect was owing to light only.

'Being in London the winter following, I ſhewed this experiment to all my friends, and among the reſt to Dr. Ingenhouſz, who was particularly ſtruck with it. The queſtion among us then was, what this *green matter* could be; and it being generally thought to be a *vegetable.* I determined to try the effect of known plants as ſoon as I ſhould return to the country. Accordingly I did ſo with the firſt ſunſhine that I had, and completed the diſcovery. But in the mean time Dr. Ingenhouſz anticipated me by his publication, which I think I ſhould not have done with reſpect to him, if I had found him in the ſame train of inveſtigation in which he found me.'

No. 3 contains the author's claim to the diſcovery of *dephlogiſticated air.* The following paſſage on this ſubject does not ſpeak highly in favour of the

 candour

candour of M. *Lavoiſier.* ‘ M. *Lavoiſier* ſays (*Elements of Chemiſtry*, Engliſh tranſlation, p. 36), “ this ſpecies of air (meaning dephlogiſticated) was diſcovered almoſt at the ſame time by Mr. Prieſtley, Mr. Scheele, and myſelf.” The caſe was this. Having made the diſcovery ſome time before I was in Paris in 1774, I mentioned it at the table of M. Lavoiſier, when moſt of the philoſophical people in the city were preſent; ſaying that it was a kind of air in which a candle burned much better than in common air, but I had not then given it any name. At this all the company, and M. and Madame Lavoiſier as much as any, expreſſed great ſurpriſe. I told them I had gotten it from *precipitate per ſe*, and alſo from *red lead.* Speaking French very imperfectly, and being little acquainted with the terms of chemiſtry, I ſaid *plomb rouge*, which was not underſtood till Mr. Macquer ſaid I muſt mean *minium.* Mr. Scheele's diſcovery was certainly independent of mine, though I believe not made quite ſo early.’

The laſt article contains a few obſervations on Mr. *Davy*'s Eſſays, which were publiſhed in Dr. *Beddoes's Contributions to Phyſical and Medical Knowledge.* He thinks Mr. *D.*, in taking it for granted that water is decompoſed by the growth of plants, from his having found dephlogiſticated air produced in this manner in water out of which air had been expelled by boiling, or by the air-pump, was not aware that water, even recently boiled, and examined while warm, contains nearly as much air as it did before boiling, and by no means ſo pure; ſo that it can probably ſupply more nouriſhment to a plant than water which had not been boiled. Air, too, Dr. *P.* obſerves, expelled from water by the air-pump, or even the Torricellian vacuum, which does it more effectually, is ſoon replaced by expoſure to the atmoſphere.

ART.

Art. XLIII. *Obſervations on the Influence of the Moon on Climate and the Animal Œconomy; with a proper Method of treating Diſeaſes when under the Power of that Luminary.* 8vo. 24 pages. Philadelphia, 1798. (N. Y. Med. Repoſ.)

SINCE the moon's attraction has been found to aſſiſt in cauſing the tides of the ocean, it has been believed, upon ſimilar conſiderations, that it likewiſe occaſions periodical movements or tides in the atmoſphere. And if the whole maſs of water and air were thus ſubjected to its influence, it was ſcarcely credible that many other things, and among them the bodies of animals and of man, ſhould not be, in ſome degree, operated upon by the ſame power. Under ſuch perſuaſion, *lunacy* has become but another name for *inſanity*, and the word *moon-ſtruck*, when applied to madneſs, has been deemed a well-choſen epithet.

Since the publication of the Eſſay *De Imperio Solis et Lunæ*, by the learned Mead, many medical obſervers have turned their attention to the ſubject; and none have written with more confidence than Kirkland, on the lunar influence upon pregnant women, and Balfour, concerning its operation on febrile diſtempers.

The writer of the preſent obſervations is a firm believer in lunar influence, and has brought together a conſiderable number of facts and remarks to ſupport his opinion. We ſelect the paſſages on the influence of this planet on climate, and on perſons in health, as ſpecimens of his compoſition and reaſoning.

'About forty-eight hours previous to and ſucceeding the new and full moon, all nature appears to be affected; a warm ſouth-weſt wind generally prevails; the barometer ſinks to 29 and 28½; and the thermometer riſes from 15 to 25 degrees: a cold, denſe, and heavy air from the north-eaſt ruſhes in to ſupply the place of this rarefied air, which continues to blow

ſometimes two or three days, attended with thick clouds and rain, obſcuring the whole atmoſphere, and often does conſiderable damage along the coaſt and wharves. It was one of theſe ſtorms that prevented Dr. Franklin from obſerving an eclipſe of the moon in the year 1760.

'Within the periods, or on one of the two days which immediately precede and follow the new and full moon, high winds, ſtorms, hurricanes, tempeſts, tornadoes, and earthquakes, are always expected; or, if a ſtorm or tempeſt is then in being, ſhe moſt commonly moderates it. Within the periods, our tides in the Delaware generally riſe from one to two feet higher than in the intervals. This is ſo well known, that ſome of our ſhip-carpenters wait for the periods before they launch their veſſels.

'I believe the water, when the moon comes towards her meridian, is at its greateſt height; becauſe the atmoſphere, from the elevation of the column of air directly under her meridian, is diminiſhed in weight and preſſure, and not more depreſſed, according to Dr. Franklin, who ſays, "The tide is a wave, and a wave a tide, in miniature; and that the wave follows her two hours after ſhe paſſes the meridian."

'The United States are moſt ſubject to inundations at the new and full moon; which is to be accounted for by the high winds, occaſioning the ſea to flow in the rivers with a ſtrong current, which check the tides, and cauſe them to overflow the low lands. The lakes on our continent are, likewiſe, it is well known, influenced by this luminary.'

The following is ſtated to be the effects of lunar influence, as obſervable in a ſtate of health: we fear they require confirmation. 'Within the periods, the pulſe is generally more quick and tenſe than in the intervals, and the reſpiration is more free and eaſy: hence an agreeable ſenſation of heat is perceived, and vigour is imparted to the whole ſyſtem.

'Perſons

'Perſons in health appear to drink more at the full and change; a plethora is induced in the ſyſtem; the appetite of thirſt is much increaſed, and, perhaps, one-third leſs of the uſual quantity of liquor is required to make a man drunk at this time than in common. This has been particularly obſerved by the friends and acquaintances of Mr. J— R—n, of this city.

'The appetite for animal food is not increaſed; the determination to the alimentary canal is diminiſhed, while that of the inſenſible perſpiration of the body is much increaſed; the quantity of fluids in the vaſcular ſyſtem is more conſiderable.

'Impreſſions made on the ſenſes excite quicker ſenſations and reflections. The ſecretions are increaſed; and hence I have often obſerved mothers and nurſes, in general, who are ſuckling children, afford more milk at this time.

'On the mind it produces the moſt powerful effects; as an equanimity of temper, a diſpoſition to cheerfulneſs, and an averſion to anger in people of iraſcible diſpoſitions. Perhaps there may be diſcovered in the atmoſphere a mixture of airs, at the periods, favourable to the intellectual faculties. In this ſtate of the mind, phyſicians viſit their patients, and relations their friends labouring under contagious diſeaſes, and are not ſo liable to receive infection.'

The author next proceeds to treat of the influence of the moon on diſeaſes, and has ſtated many facts to ſhew that the human conſtitution is invaded by various diſtempers within what he calls "the periods." As the periods, however, comprehend two days before, and as many after, the *new* moon, and the ſame in regard to the *full*, it is not wonderful that this ſhould happen. There may be, and often is, as the American reviewers remark, coincidence without cauſation.

MISCELLANEOUS.

§ 52. *Remarks on the State of Population at St. Peterſburg.* (From STORCH's *Picture of Peterſburg*, juſt publiſhed by *Longman* and *Rees*.

THE population of St. Peterſburg is eſtimated at preſent at about 230,000 perſons. This reſidence, conſequently, holds the ſixth rank among the capital cities of Europe; ſince in this reſpect ſhe ſtands only below Conſtantinople, London, Paris, Naples, and Vienna; next to her comes Amſterdam, which, according to Peſtel and others, contains about 212,000 inhabitants; then follow, in proportion to the greatneſs of their population, Rome, Venice, Berlin, Madrid, and Liſbon. In regard to fertility, or increaſe of population, ſtate of health, and mortality, St. Peterſburg appears to differ from other great cities in general, and in this reſpect, therefore, is not undeſerving the notice of the medical philoſopher.

' In order to diſcover the fertility of the inhabitants of this reſidence; we muſt learn—how many marriages are contracted—how many children ſpring from each marriage—and how many perſons are born in proportion to all the living.

' The amount of the church regiſters during our period* of time demonſtrate, that here annually of 126 perſons one marriage is contracted; or that of 63 perſons one marries. This proportion, which, in compariſon with other great cities, is but moderate, proves that here muſt be a great number who voluntarily chuſe a ſtate of celibacy. It is a curious circumſtance, that, to ſeven widows only five widowers enter into ſecond marriage.

' From a hundred marriages it is computed that four hundred and eight children are produced. This proportion, which, generally ſpeaking, is very advantageous, was in the third period ſtill more favourable, as in this a hundred marriages produced four hundred and twenty children, which is a great many; as in large cities elſewhere, calculators commonly venture to compute from 330 to 380. Here likewiſe we find the ſame proportion, confirmed by obſervation, in all countries, between the male ſex and the female. A hundred and five boys are born to a hundred girls.

' Now, in order to find all the relations of fertility, it remains only to know how many perſons are born annually in compariſon with the whole number of the living. From the reſults of our period it appears,

* All the amounts here quoted are average numbers from the compariſon of a period of fourteen years, between 1764 and 1780. In ſpeaking of periods, by the *firſt period* is to be underſtood the ſpace of time from 1764 to 1770; by the ſecond, that from 1770 to 1775; and by the third, that from 1775 to 1780.

that

that we may affirm one to be born of thirty-one perſons. The ſame proportion likewiſe holds good in almoſt all great cities.

'We will now enquire into the *mortality*.—In general, of thirty-five perſons one dies annually; if, therefore, the population of the reſidence every year obtains an increaſe of a one-and thirtieth part of its number of people, it alſo loſes yearly a five-and-thirtieth part of it. This mortality is, however, extremely ſmall; in large cities there uſually die of a thouſand perſons forty-two, in moderate cities thirty-ſix, in ſmaller thirty-one; whereas here only twenty-eight.

'The proportion of the births to the deaths hence ariſes of itſelf; it being as a hundred and fourteen to a hundred. In the laſt period it was as a hundred and thirty to a hundred; conſequently the population in that period was gainer by the exchange between the living and the dead. At the ſame time we have here a ſingular phenomenon. The ſurplus of the births to the deaths almoſt entirely proceeds from the female ſex; a circumſtance very prejudicial in any caſe, which, however, was conſiderably diminiſhed in the laſt period. From the whole ſpace of time it appears that the number of males who died were to the females as a hundred and eighty-four to a hundred.

'It is of ſtill more importance to ſuch as inquire into theſe matters, to learn the mortality of each of the ſeveral ages. Here we ſhall find a deviation from the ordinary rules of Nature, which has its ſource either in the firmer organization, or, to uſe a technical expreſſion, in the ſtronger vitality, or in the way of life and manners.

'The population of all towns and countries ſuffers a great damage by this, that numbers of human creatures deſigned for exiſtence are loſt at their very birth, to this end and to the community. It is proved by the reſults of our whole ſpace of time, that here of a thouſand births ſeven are brought dead into the world. This number, which, in compariſon with other countries, is extremely ſmall (even among the foreign inhabitants of Peterſburg, of a thouſand children twenty-five are ſtill-born), has yet been gradually declining in the ſucceſſive periods. In the firſt we have, of a thouſand births, ten; in the ſecond, ſeven; and in the third, three ſtill-born. This unexampled ſmall proportion is owing to the ſtrong and robuſt bodily ſtructure of the Ruſſian matrons. Of a thouſand Ruſſian women no more than ſeven die in childbed; among the ſame number of foreign females, fifteen. Of a thouſand new-born boys, there were nine, and of an èqual number of girls, five brought dead into the world.

'In the firſt year of life, of a thouſand children two hundred and ſeventy-nine die. This proportion is indeed greater than it ought to be in the general and undiſturbed courſe of Nature; it is ſtill, however, leſs than in other large cities, and even among the foreign inhabitants of St. Peterſburg, with whom three hundred and nine children die out of a thouſand in the firſt year. In this period of life more boys than girls are loſt. Out of a thouſand, of the former three hundred and ſeventy die, and of the latter only two hundred and twenty-ſeven.

'From the firſt to the fifth year, of a thouſand children two hundred and fifteen die. The mortality in this period, therefore, is lower than that

that in the first year alone. This proportion likewise shews, with what maternal care Nature has provided for the natives of Russia. Of a thousand children, there die before the 15th year, in Sweden, two hundred and seventy-nine; in Stockholm, two hundred and fifty-eight; in London, four hundred and thirty-five; and among the foreigners in St. Petersburg, three hundred and forty-six. The mortality, which in the first year of life was greater with the girls than with the boys, is likewise so in the present instance. Of a thousand boys at that age a hundred and seventy-four die, whereas of a like number of girls three hundred and five. Hence it follows, that of a thousand children of the age of fifteen, living in St. Petersburg, there must be six hundred and two boys and three hundred and ninety-eight girls.

'In short, from the twentieth to the sixtieth year, of a thousand persons eight hundred and thirteen die. Till the twentieth year, the mortality in Petersburg is less than in other great cities; but after that period it encreases in so extraordinary a degree, that this lamentable circumstance can only be attributed to some cause militating against the benevolent intentions of Nature. Neither by the bodily frame nor the climate is this great mortality to be explained, since both are favourable to the duration of life, as the periods till the fifteenth year sufficiently prove. Nothing but the mode of life can, therefore, be to blame for this political calamity: and as likewise here the common disadvantages of it are peculiar to all great cities, no other cause remains that we can accuse of this terrible effect—than brandy. The following remarks on the prevailing diseases will supply us with clearer arguments in support of this conjecture. For evincing the magnitude of the loss sustained by the population of the residence in this period, we will only subjoin, that of a thousand persons at the same time of life, in Sweden only five hundred and sixteen, in Stockholm seven hundred and twelve, in London seven hundred and twenty, and in Petersburg, even among the foreigners, no more than seven hundred and sixty-four are carried off.—The mortality, which till the twentieth year has constantly fallen more heavily on the female than the male sex, here suddenly takes a different course. Of a thousand men eight hundred and fifty-six die; of the same number of women only seven hundred and two.

'According to this calculation it follows, that there can be but few aged people in St. Petersburg. Of three hundred and thirty-two births only one attains the ninetieth year; whereas by the ordinary course of Nature, upwards of three should arrive at that venerable age. In the space of seventeen years, which our calculation comprehends, there are, however, thirty-nine persons who are above a hundred; three of these had proceeded to an age of one hundred and twenty to one hundred and thirty.

'Still we have an enquiry to make concerning the public state of health, and the virulence of the diseases. A long list of the several species of them would not be necessary to our purpose; yet it is an observation of great importance, that more than three-fifths of all that die are carried off by the following distempers:—The average number of all the deaths was 4616, and there died annually 1348 persons of the pleurisy, 1007 of consumption, and 671 of fever.—The natural small-

pox,

pox, which generally kills one out of every fourteen that are born, takes off here only one out of thirty-one; and, ſince the introduction of inoculation, only one out of thirty-five.

'The ſtandard for the progreſs of population is the final reſult of theſe ſeveral proportions. It appears from the ſurplus of the births to the deaths, which, as an example, amounted in the firſt period of our given ſpace of time to four hundred and forty-five, in the ſecond to a hundred and ninety-four, and in the third to one thouſand three hundred and twenty-ſeven. The population had probably within this laſt period augmented only about a tenth; but its force, its tendency to increaſe, was in the third period more than three times greater than in the firſt, and nearly ſeven times greater than in the ſecond. Beſides, how greatly the population of St. Peterſburg has actually increaſed ſince the year 1775, is manifeſt from a compariſon of the calculations and numberings above adduced. This increaſement having gone on in the ſame proportion ſince, we may affirm, that the reſidence in the year 1800 contained upwards of 250,000 inhabitants.'

---

§ 53. *On the Sebacic Acid. By M.* Thenard (From Bulletin de la Soc. Philomat.).

Chemiſts have in general conſidered the volatile ſubſtance, poſſeſſing a penetrating and even ſuffocating odour, which is diſengaged during the diſtillation of animal fat, as a peculiar ſpecies of acid, and have given it the name of the *ſebacic acid.* In the memoir of M. *Thenard* here noticed, it is proved that the true ſebacic acid has not theſe characters, and has not, in fact, been hitherto at all known. He propoſes two methods for obtaining the real ſebacic acid: of theſe, the firſt is the moſt ſimple, and conſiſts in diſtilling in an open fire animal fat, waſhing the product in warm water. This water is filtered and evaporated, when an acid is procured, which cryſtallizes in the form of needles.

The ſecond method is more complicated, but at the ſame time enſures the purity of the acid. The water employed as above, in waſhing the diſtilled product, is ſaturated with potaſh: the *ſebate of potaſh* thus produced is decompoſed by a ſolution of lead, when there forms a feculent precipitate of *ſebate of lead*, which again is decompoſed by the ſulphuric acid. In this way, by waſhing and evaporation, the ſebacic acid may be obtained in a ſtate of purity.

This ſubſtance to the taſte is ſlightly acid; it is free from ſmell, melts like a ſpecies of fat; is much more ſoluble in hot than in cold water: boiling water ſaturated with this acid concretes into a ſolid maſs on cooling; alkohol diſſolves it in conſiderable quantity. By cautious evaporation of theſe ſolutions, it may be obtained in the form of large brilliant plates.

The ſebacic acid precipitates the acetite and nitrate of lead, the nitrate of ſilver, and the acetite and nitrate of mercury. With potaſh it forms a ſoluble ſalt nearly taſteleſs, and which does not attract humidity from the air. It does not trouble lime-water, the water of barytes, nor that of ſtrontian.

Theſe

Theſe experiments demonſtrate the preſence of a peculiar acid in the product of the diſtillation of animal fat. M. *Thenard* is of opinion, that the penetrating odour of fat in diſtillation is owing to a part of this ſubſtance being decompoſed, and converted into the gaſeous ſtate. This gas is neither acid, nor does it combine with alkalies. The odour of burnt fat, therefore, is not owing, as commonly ſuppoſed, to the ſebacic acid, but is of the ſame nature with that which iſſues from fat in a rancid ſtate.

§ 54. *On the Inſect Pulex Monoculus.* By M. *Jurine* (Journal de Phyſique, Meſſidor, An. 9).

There is a ſmall cruſtaceous animal often very abundant in ſtagnant waters, vulgarly called the water flea *(puce d'eau)*, and which has ſometimes given riſe to the report of ſhowers of blood, on account of the eggs with which it is filled in the ſpring ſeaſon giving it a red colour, that ſeems to tinge the whole body of the water. M. *Jurine*, in the journal quoted above, gives a minute deſcription of this little animal. Amongſt other things he obſerves, that the eyes being ſituated ſo cloſe together, has given riſe to the miſtaken notion of its having but a ſingle eye. But the moſt curious fact belonging to it is, that the female, when ſhe has once received the male, tranſmits the influence to her female deſcendants, ſo that they all lay eggs without copulation, even to the ſixth generation; after which the young ones die in hatching. Another ſpecies carried this influence of a ſingle copulation as far down as the fifteenth generation: the inſect called *vine-fretter* is remarkable for a ſimilar property. Theſe generations without copulation, however, are leſs prolific, and ſucceed each other leſs rapidly than thoſe in which the male inſect takes a part.

§ 55. *Gaſeous Oxyd of Carbon.*

Mr. *Cruickſhank* of Woolwich has diſcovered that *carbon* is ſuſceptible of combining with oxygen in two different proportions, both capable of aſſuming and maintaining the form of gas: one of them, the carbonic acid, well known; the other containing a different proportion of oxygen, viz. two to one of carbon. The latter he calls the gaſeous oxyd of carbon. It has no acid properties, and may be conſidered as an intermediate ſubſtance between the pure hydro-carbonates and the carbonic acid. This diſcovery accounts for the inflammable gas generated in diſtilling a mixture of charcoal with any of the metallic oxyds, or in expoſing to a ſtrong red heat a mixture of the carbonates of lime or barytes, and iron filings, &c. For, in the firſt inſtance, the gas is formed by the union of the oxygen of the calx with the carbon, in conſequence of which the metal is revived; and, in the ſecond caſe, the carbonic acid itſelf is decompoſed, being deprived of part of its oxygen by the metal, which thereby becomes to a certain degree oxydated.

§ 56. *Extraction of Gum from the Lichen, or Tree Moſs.*

An important diſcovery has lately been made on this ſubject by Lord *Dundonald*, and which promiſes to be of great national importance: the lichen

lichen, or *tree-moſs*, conſiſts, in a great part, of a gummy matter, fit for all the purpoſes in manufactures for which *gum Senegal* has been hitherto employed. It does not appear that there is any very great difference in the produce of gum from the lichens collected from different trees or ſhrubs, all of them anſwering nearly equally well for the purpoſe. The lichen is moſt abundant on the trees which grow in a poor, ſtiff, clay ſoil, particularly if ſituated at ſome conſiderable height above ſea-level. It ſhould be pulled in dry weather, otherwiſe it is apt to break in the pulling; beſides, in this caſe, requiring to be dried before it can be laid up with ſafety in the ſtorehouſe; where, if put in dry, it may be kept for years. According to Dr. *Brown*, lecturer on botany in the univerſity of Glaſgow, it takes three or four years in coming to maturity, or its full ſize, ſo that a crop from the ſame tree may be had every fourth year.

The lichen does not conſiſt entirely of gummy matter. There is the outer ſkin or cuticle, and below that a green reſinous matter: the remainder of the plant conſiſts of partly gum, partly a matter ſomewhat analogous to animal ſubſtances, and a ſmall proportion of fibrous matter, which cannot be diſſolved by boiling, or the action of alkaline ſalts. The firſt proceſs in preparing the gum is to free the lichen from the outer ſkin and reſinous matter, which is done by immerſion in boiling water for a ſhort time. It is then boiled in a copper, with about two gallons of water, and about half an ounce of ſoda or pearl-aſhes, to every pound of lichen. The boiling is to be continued until the liquor acquire a conſiderable degree of gummy conſiſtence, when it is fit for uſe.

The advantages that may be derived from this proceſs will appear from a compariſon of its price with that of *gum Senegal.* The price of the latter, ſince the commencement of the war, has riſen from 140l. to 400l. per ton. Gum from the lichen may, all charges included, be prepared at one-fourteenth part of the preſent price of *gum Senegal,* and at one-ſixth of the peace-time price.—Nicholſon's Journal, No. 55.

---

§ 57. *Galvaniſm.*

The influence of the galvanic phenomena on the *Lavoiſerian* doctrines of chemiſtry becomes daily more and more apparent. The ſeparate production of oxygen and hydrogen gaſes on the different ſides of the galvanic pile threatens to overturn entirely the ſuppoſed compoſition of water, as conſiſting of the baſes of theſe two gaſes. The formation of water by the combuſtion of hydrogen and oxygen gaſes ſeems to ſhew that theſe gaſes are themſelves compounds of water with the electric or galvanic fluids. The explanation of moſt of the phenomena of chemiſtry, it has been obſerved, is involved in this diſcuſſion. The nature of the atmoſphere and of vapours, combuſtion, and all the appearances of light, heat, or electricity, chemical ſolution, decompoſition, &c in ſhort, the whole ſyſtem of M. *Lavoiſier*, totters, ſince we know that water is not compoſed of the baſes of oxygen and hydrogen air.

It has been hitherto ſuppoſed, that the galvanic phenomena eſſentially require for their production at leaſt two metallic ſubſtances, or one metal and charcoal, with a ſtratum of fluid. It has lately, however, been diſcovered by Mr. *Davy*, that an accumulation of this influence,

fluence, exactly ſimilar to the accumulation in the common pile, may be produced by the arrangement of ſingle metallic plates, or arcs, with different ſtrata of fluids. An intereſting paper on this ſubject has been lately read before the Royal Society, of which the following is the ſubſtance.

Mr. *Davy* was led to the diſcovery of this fact, by the obſervation of ſome phenomena relating to the connexion of chemical changes with the evolution of the galvanic power. It appeared, in ſeveral experiments, that ſeries of double metallic plates, incapable of acting in the common arrangement, were readily made to produce galvanic effects, by being alternated with acids, or other fluids capable of oxydating one only of the metals of the ſeries. Thus, double plates, compoſed of ſilver and gold (metals which have been ſuppoſed to differ very little in their powers of conducting electricity), produced galvanic action, when placed in contact, in the common order, with cloths moiſtened in diluted nitric acid. And copper and ſilver acted powerfully with nitrate of mercury.

Theſe facts induced him to ſuppoſe, that the alternation of two metallic bodies with fluids was eſſential to the production of accumulated galvanic influence, only ſo far as it furniſhed two conducting ſurfaces of different degrees of oxidability; and that this production would take place, if ſingle metallic plates could be connected together by different fluids, in ſuch a manner that one of their ſurfaces only ſhould undergo oxidation, the arrangement being regular.

On this ſuppoſition, he made a number of experiments on different arrangements of ſingle metals and fluids; and, after many various proceſſes, he was enabled to aſcertain, that many of theſe arrangements could be made active, not only when oxidations, but likewiſe when other chemical changes were going on in ſome of their parts.

In deſcribing the different galvanic combinations formed by ſingle metallic plates and fluids, Mr. *Davy* divides them into three claſſes, following, in the arrangement, the order of time with regard to diſcovery.

The firſt and moſt feeble claſs is compoſed, whenever ſingle metallic plates, or arcs, are arranged in ſuch a manner that two of their ſurfaces, or ends oppoſite to each other, are in contact with different fluids, one capable, and the other incapable, of oxidating the metal. In this caſe, if the ſeries are numerous, and in regular alternation, galvanic influence will be accumulated, analagous, in all its effects, to the influence of the common pile.

Tin, zinc, and ſome other eaſily oxidable metals, act moſt powerfully in this claſs of combinations.

If pieces of poliſhed tin, about an inch ſquare, and $\frac{1}{20}$ of an inch thick, be connected with woollen cloths of the ſame ſize (moiſtened, ſome in water, and ſome in diluted nitrous acid), in the following order; tin, acid, water, and ſo on, till twenty ſeries are put together, a feeble galvanic battery will be formed, capable of acting weakly on the organs of ſenſe, and of ſlowly producing the common appearances in water; the wire from the oxidating ſurface of the plates evolving hydrogen;

hydrogen; and the wire from the non-oxidating ſurface (when of ſilver) depoſiting oxide.

In all caſes, when the batteries of the firſt claſs are erected perpendicularly, the cloth moiſtened in acid muſt be placed under the cloth moiſtened in water; and, in this arrangement, as the acid is ſpecifically heavier than water, little or no mixture of the fluids will take place.

When zinc is employed, on account of its rapid oxidation in water containing atmoſpheric air, three cloths ſhould be uſed; the firſt moiſtened in weak ſolution of ſulphuret of potaſh (which is poſſeſſed of no power of action upon zinc, and which prevents it from acting upon the water); the ſecond moiſtened in a ſolution of ſulphate of potaſh, of greater ſpecific gravity than the ſolution of ſulphuret; and the third wetted in an oxidating fluid ſpecifically heavier than either of the ſolutions. In this caſe, if the order be as follows, zinc, oxidating, ſolution, ſolution of ſulphate of potaſh, ſolution of ſulphuret of potaſh, very little mixture of the fluids, or chemical action between them, will take place: and an alternation of twelve ſeries of this kind forms a battery capable of producing ſenſible effects.

The ſecond claſs of galvanic combinations with ſingle plates is formed, when plates, or arcs, compoſed of a metallic ſubſtance capable of acting upon ſulphurated hydrogen, or upon ſulphurets diſſolved in water, are formed into ſeries, with portions of a ſolution of ſulphuret of potaſh, and water, in ſuch a manner that one ſide of every plate, or arc, is in contact with water, whilſt the oppoſite ſide is acted on by the ſolution of ſulphuret. Under theſe circumſtances, when the alternation is regular, and the number of ſeries ſufficiently great, galvanic power is evolved; and water, placed in the circuit with ſilver wires, is acted on; oxide being depoſited on the wire connected with the ſide of the plate undergoing the chemical alteration, whilſt hydrogen is evolved from the ſide in contact with water.

Silver, copper, and lead, are each capable of forming this combination Plates made from either of thoſe metals may be arranged with cloths (moiſtened, ſome in water, and others in ſolution of ſulphuret of potaſh), in the following order; metal, cloth moiſtened in ſulphuret of potaſh, cloth moiſtened in water, and ſo on.

Eight ſeries will produce ſenſible effects; and the wire from the top of the pile produces oxide.

Copper is more active, in this claſs of batteries, than ſilver; and ſilver more active than lead.

The third and moſt powerful claſs of galvanic batteries, conſtructed with fluids and ſingle metals, is formed, when metallic ſubſtances oxidable in acids, and capable of acting on ſolutions of ſulphurets, are connected, as plates, with oxidating fluids and ſolutions of ſulphuret of potaſh, in ſuch a manner that the oppoſite ſides of every plate may be undergoing different chemical changes; the mode of alternation being regular.

The

The ſame metals that act in the ſecond claſs may be uſed in the third claſs; and the order of their powers is ſimilar. The pile may be erected in the ſame manner as the pile with zinc in the firſt claſs; the cloths moiſtened in acid being ſeparated from thoſe moiſtened in ſolution of ſulphuret, by a third cloth, ſoaked in ſolution of ſulphate of potaſh.

Three plates of copper, or ſilver, arranged in this manner, in the juſt order, produce ſenſible effects; and twelve or thirteen ſeries are capable of giving weak ſhocks, and of rapidly producing gas and oxide in water; the wire connected with the oxidating end of the apparatus evolving hydrogen; and the wire attached to the end acting on the ſulphuret depoſiting oxide when compoſed of ſilver, and generating oxygen when of gold.

In all the ſingle metallic piles conſtructed with cloths, the action is very tranſient: the decompoſition of the acids, and of the ſulphurets, is generally completed in a few minutes; and, in conſequence, the galvanic influence ceaſes to be evolved. The arrangement of all the different ſeries may, however (by means of an apparatus conſtructed after the ideas of Count Rumford), be made in ſuch a manner as to give conſiderable permanency to their effects. This apparatus is a box, covered with cement incapable of conducting electricity, and compoſed of three pieces of mahogany, each containing grooves capable of receiving the edges of the different plates proper for compoſing the ſeries. One half of theſe plates muſt be compoſed of horn, or glaſs, and the other half of metallic ſubſtances; and the conductors of electricity, and the non-conductors, muſt be alternately cemented into the grooves, ſo as to form water-tight cells.

When the apparatus is uſed, theſe cells are filled, in the galvanic order, with different ſolutions, according to the claſs of the combination; and connected in pairs with each other, by ſlips of moiſtened cloth, carried over the non-conducting plates.

A combination of fifty copper-plates, arranged in this manner, with weak ſolutions of nitrous acid, or nitrate of ammoniac, and ſulphuret of potaſh, gives pretty ſtrong ſhocks, rapidly evolves gas from water, and affects the condenſing electrometer.

It does not loſe its power of action for many hours; and, when this power is loſt, it may be reſtored by the addition of ſmall quantities of concentrated ſolutions of the proper chemical agents to the fluids in the different cells.

From two experiments made on copper and ſilver, it would appear, that the ſingle metallic batteries act equally well when the metals made uſe of are ſlightly alloyed, and when they are in a ſtate of purity.

A curious circumſtance relating to galvaniſm has occurred to M. *Fourcroy*, which ſeems to point out a new law reſpecting this influence, and will tend to improve our knowledge of the electric ſhock, if electricity be the ſame with galvaniſm; or, to mark their differences more effectually,

effectually, if the contrary ſhould hereafter be proved. A pile of plates of zinc and ſilver, ten inches in diameter, and conſiſting of no more than ſix plates of each metal, gave little or no perceptible ſhock, although the power of the galvanic ſtream was evinced to be great, by the igniton and diſperſion of fine wire. Yet the ſame furface of metal, formed into a pile of plates of ſmaller diameter, as when cut into four, gave ſtrong ſhocks, but did not exhibit the combuſtion of wire.

---

§ 58. *On the Phoſphoreſcent Properties of the Medullary Subſtance of the Brain and Nerves.*

M. *Cabarris* read lately before the French *National* Inſtitute an intereſting memoir on this ſubject. It is well known, he obſerved, that phoſphorus is derived from animal matter. It is alſo, indeed, found in the mineral kingdom; but it may be queſtioned whether its origin, like that of calcareous earths, may not always be referred to animal recrements; that at leaſt which is the direct product of theſe recrements may be conſidered as the immediate effect of ſenſitive life, as a reſult of the changes which the animal ſolids and fluids are ſuſceptible of undergoing, or as one of the ſimple ſubſtances which they poſſeſs the peculiar property of aſſimilating. In the bodies of animals which are undergoing decompoſition, phoſphorus appears to enter into a ſlow combuſtion. Without producing real flame, without at leaſt the power of igniting combuſtible bodies in its immediate vicinity, it becomes luminous, and throws out flaſhes of light amid the ſurrounding darkneſs, ſufficiently vivid to afford ſome real foundation for the exiſtence of thoſe phantoms which people are at once deſirous and afraid of ſeeing in the neighbourhood of cemeteries. The brain and its appendices, or rather the nervous ſyſtem in general, appears to be the peculiar reſervoir of phoſphorus; for it is the incipient decompoſition of the cerebral pulp which gives riſe to thoſe phoſphoreſcent lights, which, during the darkneſs of the night, are frequently obſerved in anatomical theatres; and it is chiefly around the brain, expoſed by being deprived of its natural coverings, or the fragments of nervous matter lying on the tables, that they are perceived. A variety of obſervations have led M. *Cabarris* to conclude, that the quantity of phoſphoreſcent matter developed after death, bears ſome proportion to the activity of the ſyſtem during life. He thinks he has noticed, that the brains of perſons who have died of diſeaſes marked by a ſtrong augmentation of this activity gave a greater, as well as a more vivid light. Thoſe of maniacs, he obſerves, are peculiarly luminous; thoſe of dropſical and leucophlegmatic ſubjects much leſs ſo.

---

§ 59. *Method of procuring Potaſh and Soda in a State of Purity.*

Mr. *Chenevix*, in the number of the *Philoſophical Tranſactions* before noticed, makes ſeveral intereſting remarks on this ſubject. By the terms *potaſh* and *ſoda*, he obſerves, ſhould be underſtood thoſe alkalies in a pure ſtate. It is a violation of principles to apply a word, appropriated by common conſent to deſign a pure, and, as yet, a ſimple ſubſtance, to ſuch heterogeneous mixtures as *lapis cauſticus*, carbonates of potaſh

potash and soda, &c. It is, indeed, much to be desired, that the epithets, *caustic*, *pure*, *saturate*, &c. should be regarded as tautology, which they really are. There is no potash purer than potash. When it is not pure, we should say instead of "I took so much potash," "I took so much of a mixture of potash, and, whatever other substance is mixed with it." Thus, instead of calling *lapis causticus*, caustic potash, or potash, as is often done, we should say, "I took so much of a mixture of potash, sulphate, muriate, carbonate, and sulphuret of potash; siliceous and aluminous earths; iron and manganese;" for such, by analysis, is the *lapis causticus* proved to be. To all this is added, by apothecaries, a little lime. Yet this is the substance sometimes called potash.

By heating Dantzic potash, or, still better, pearl-ash, with lime, and evaporating in a well-plated copper vessel, a white mass is left. This mass dissolved as far as it can be in alkohol, and the liquor distilled to dryness in a plated alembic, gives an alkali of a perfect whiteness. In this state it is dangerous to touch it; its action on animal matter is so sudden and so violent. It attacks all stones with the greatest ease and rapidity, and is therefore serviceable in the *humid* analysis of mineral bodies. Dissolved in water, it makes not the least cloud in barytes water, or in a solution of nitrate or muriate of that earth; and may be used, as a very delicate and sensible re-agent, to distinguish it from strontian. By saturating with an acid, and then seeking silica, or alumina, by ammonia, no trace of them can be found, nor indeed of any thing else. The author does not say, however, that the potash is in this state perfectly free from every other substance; as he believes it contains a little carbone, produced by the decomposition of the alkohol, and is, therefore, a sub-carburet of potash. The same method, employed with carbonate of soda, is the only one to procure soda in a state of equal purity.

§ 60. *On the Period of Gestation in Animals.*

The exact period of gestation in different animals has not been ascertained; nor whether it is always the same, or liable to variations, in different individuals of the same species. The memoirs of the National Institute of France contain an interesting communication on this subject by M. *Tessier*, whose observations have led him to the following results.

I. COWS.

One hundred and sixty cows were observed.

14 calved from the 241st to the 266th day; that is, from 8 months and 1 day, to 8 months and 26 days.
3 —— on the 270th day.
50 —— from the 270th to the 280th day.
68 —— from the 280th to the 290th day.
20 —— on the 300th day.
5 —— on the 308th day.

160

Consequently there were 67 days between the two extremes.

II. MARES.

II. MARES.

One hundred and two mares were obſerved.

3	foaled	on the 311th day.
1	——	on the 314th day.
1	——	on the 325th day.
1	——	on the 326th day.
2	——	on the 330th day.
47	——	from the 340th to the 350th day.
25	——	from the 350th to the 360th day.
21	——	from the 360th to the 377th day.
1	——	on the 394th day.
102		

This gives a latitude in the time of geſtation of 83 days; and the following obſervation may be made reſpecting cows and mares, namely, that more of the firſt brought forth before the completion of the ninth month, than of the ſecond before that of the eleventh.

III. SOWS.

Of theſe only fifteen were obſerved.

1	brought forth young, which lived,	on the 109th day; that is, 3 months and 19 days.
10	————	from the 110th to the 120th day.
3	————	on the 121ſt day.
1	————	on the 122d day.
1	————	on the 123d day.
15		

Conſequently, the difference between the two extremes was 14 days.

IV. RABBITS.

One hundred and thirty-nine were obſerved, during the courſe of three years.

1	brought forth	on the 26th day.
2	————	on the 27th day.
3	————	on the 28th day.
53	————	on the 29th day.
50	————	on the 30th day.
21	————	on the 31ſt day.
9	————	on the 33d day.
139		

The difference between the two extremes on theſe animals was ſeven days.

§ 61. *Effects of Belladonna on the Iris.*

In a former number of our Review (Vol. IV. p. 459) we mentioned, on the authority of Dr. *Reimarus*, the effect of the extract of the belladonna in inducing dilatation of the pupil of the eye, and of its probable

bable utility in the operation for the cataract. We are glad to find a confirmation of this curious fact *(Med. and Phys. Jour.)* from the testimony of Mr. *Paget*, surgeon to the *Leicester Infirmary*. This gentleman has lately employed it in three cases previous to the extraction of the crystalline lens; and, although the result did not quite answer his expectations, yet he is convinced it will be found of considerable utility, when experience shall have decided to what extent the application may be carried without danger of evacuating the vitreous humour from too great a dilatation of the pupil.

Four grains of the extract, procured from Apothecaries Hall, were diffused in one drachm of water, and five or six drops introduced into the eye at one time. The application gave no pain, nor produced any apparent irritation; but in about half an hour the iris was perfectly invisible, and the whole circumference of the opaque crystalline perfectly in view. The effect continued gradually diminishing after this time; but the pupil was not reduced to the size of that of the other eye in less than three days. The same application was made half an hour previous to the operation, and the pupil became dilated; but immediately on the application of the knife to the cornea, the iris shewed that its irritability was not destroyed, for a contraction of the pupil immediately took place, but not to its natural size.

It did not appear, however, that the application had any effect in quieting the muscles of the eye, or that it at all tended to prevent the rolling of the eye during the operation. It seems especially adapted to the examination of the cataract previous to the operation, especially when we wish to ascertain whether the capsule is opaque, or only the lens itself; and, in other cases, where an accurate examination of the parts posterior to the iris is necessary.

---

§ 62. *Use of the Oxy-muriatic Acid in Medicine.*

Dr. *Van Diemen*, a physician of Amsterdam, observes, that he has found the oxygenated muriatic acid serviceable in cases of itch, and also of tinea capitis. We are not informed of the dose or exact mode in which he employs it.

---

§ 63. *Effects of the Vaccine Inoculation on Animals.*

Some experiments have lately been made on this subject by Mr. *Forbes*, of Camberwell, which appears to disprove the supposed preventive power of the vaccine inoculation with regard to the *distemper* in dogs. Two dogs belonging to Mrs. *Crespigny*, of the above place, were inoculated with vaccine matter, and the inoculated parts went through all the stages described as necessary for giving it proper effect: but the animals were not made apparently ill by it. Both of them afterwards took the *distemper*, and one of them died in consequence.—*Med. and Phys. Jour.*

---

§ 64. *Cæsarean Operation.*

This operation was performed at Manchester, on the 14th of August last, by Mr. *Wood*, in presence of Dr. *Hull*, Mr. *White*, and Mr. *Thorp*,

Thorp, on account of deformity of the pelvis, ſo great, in their opinion, as to render delivery by other means wholly impracticable. The patient had before had ſeveral children, and with all of them had tolerably good labours. The deformity, in this caſe, aroſe from *malacoſteon*, which had been coming on gradually for five or ſix years preceding. The operation was performed on the third day after the labour commenced, and previouſly to it there did not appear at any time any ſymptom of danger, the pulſe beating only about 86 to 92 ſtrokes in a minute: ſhe had no vomiting, and had paſſed both fœces and urine naturally and regularly. Her pains were ſtrong and frequent. There was no tenſion nor tenderneſs of the abdomen; and the tongue was clean. Notwithſtanding theſe favourable appearances, which, no doubt, gave reaſonable hopes of a happy termination, the operation proved fatal in about ſeventy-two hours after its performance.

On diſſection, it was found that the contents of the abdomen generally had undergone great inflammation, as well as the uterus itſelf and its ligaments. There were marks of beginning gangrene about the edges of the wound in the uterus, and eſpecially on the inner ſurface of the cervix, which, through its whole ſubſtance, appeared much contuſed. No hæmorrhage of conſequence took place, and the death of the patient was evidently owing to inflammation and conſequent irritation.

§ 65. *Suppoſed Cauſe of Caries of the Teeth.*

Mr. *Blanchet*, of Quebec, has diſcovered, that an acid is formed near and round carious teeth. Being anxious for the preſervation of ſeveral of his teeth, which were waſting and crumbling away in the common manner, he endeavoured to find out experimentally the nature of the agent which thus preyed upon them. In the courſe of three trials he obſerved, that, if he omitted for ſeveral days to clean his teeth, the fluid collected within their cavities turned the tincture of turnſol to a red colour; and, when carefully applied to the tongue, excited a conſiderably ſour taſte. The ſaliva alone produces neither of theſe effects; nor is the tincture of turnſol reddened but in the fainteſt degree by that fluid, if the teeth have been frequently waſhed. The acidity is inherent in the fluid only which is contiguous to the carious ſurface. It is preſumed not to be the carbonic acid, for this would fly off in gas, in ſo warm a temperature as that of the mouth. It was not, in the author's caſe, derived from cider, porter, or acid drink, none having been taken. Mr. *Blanchet* thinks it is probably the ſeptic (nitrous) or phoſphoric acid, or a mixture of both.

§ 66. *Remedy for the Tooth-ache.*

The following compoſition, in the form of a paſte, is ſtrongly recommended for the relief of the tooth-ache, by Dr. *Handel*, of *Mentz*. ℞. ol. hyoſciami ʒj. opii thebacii ʒ½. extract: belladonæ, camphoræ, áá grs. vi olei cajeput. Tinct. cantharidum, áá gtt. viij. Redigantur in formam opiat.

Corref-

Correſpondence.

We are equally ſurpriſed with M. Y. that the Noſologia Methodica of Sauvages has never been publiſhed in this country, as it has been in many others on the continent; and we agree with him in thinking, that any abridgement of ſo eſtimable a work would greatly leſſen its value. M. Y. may aſſure himſelf of procuring the *Leipſic* edition, by *C. F. Daniel*, noticed in our laſt volume, in a few weeks (unleſs an early ſetting in of the froſt ſhould interrupt the communication with the continent), through the medium of our bookſeller, on giving him a direct order to that effect.

Dr. *Jackſon*'s notice came too late for inſertion in the preſent number; it has, beſides, been anticipated in another Journal.

No. XLVI.

THE MEDICAL AND CHIRURGICAL REVIEW.

JANUARY, 1802.

Art. XLIV. *A Treatiſe on Febrile Diſeaſes, &c.* *By* A. P. Wilson, *M.D. &c.* Vol. III.

(Continued from page 233.)

IN our laſt we entered with ſome degree of minuteneſs into the theory of inflammation which the author was led to adopt. We are now to follow him in his conſideration of the phlegmaſiæ in general.

The phlegmaſiæ are thoſe ſymptomatic fevers in which the local affection is inflammation; when this is external, it is known by ſymptoms evident to the ſenſes: when it is internal, a fixed pain and leſion of function point out its ſeat. The only mark of diſtinction between ſimple inflammation and the phlegmaſiæ, is, the preſence of fever in the latter. The combinations of inflammation and fever, the author obſerves, are of three different kinds, to one of which only the term phlegmaſiæ is applied, the others being of a nature very different from phlegmaſiæ, and requiring very different modes of practice. 1. Inflammation and fever may be combined by a ſimple inflammation ſupervening on

fever, as in the exanthemata; or, 2dly, they may be combined by the inflammation producing fever, as in the phlegmaſiæ here conſidered; or, 3dly, by a phlegmaſia (that is, the inflammation and the fever it occaſions) ſupervening on ſimple fever.

'The firſt of theſe is readily diſtinguiſhed, by the appearance of the inflammation not aggravating the fever. The laſt is readily diſtinguiſhed where the phlegmaſia ſupervenes a conſiderable time after the commencement of the fever, as happened in many epidemics alluded to in the firſt and ſecond volumes of this work, in which inflammation of the ſtomach, bowels, brain, &c. ſupervened on intermittent or continued fever, or on the exanthemata, forming complaints eſſentially different, although they have not always been accurately diſtinguiſhed, from the phlegmaſiæ.

'But when the phlegmaſia ſupervenes ſoon after the commencement of the fever, the diagnoſis, although ſtill neceſſary in regulating the treatment of the complaint, is more difficult. All that can be ſaid on this ſubject, as far as I am capable of judging, is, that wherever the fever appears unaccompanied by external inflammation, or any of thoſe local affections which we are about to conſider as denoting the preſence of an internal inflammation, however early ſuch ſymptoms may ſupervene, the caſe is to be regarded as a complication of fever and phlegmaſiæ, whether they ariſe from the ſame cauſe or not.'

The following obſervations reſpecting the diagnoſis in internal inflammations are highly judicious.—'We determine the preſence of internal inflammation by certain ſymptoms which, from diſſection after death, it has been determined, always indicate this ſpecies of derangement. Theſe ſymptoms are ſhortly enumerated in the above definition of the phlegmaſiæ. "Febris ſymptomatica, dolore topico, ſimul "læſa partis internæ functione;" and no further account of theſe ſymptoms need be given; for wherever there

there is fixed pain, derangement of ſome internal function, and fever, we have reaſon to believe that local inflammation is preſent, which is placed beyond a doubt, if the pulſe be hard.'

'But the foregoing ſymptoms not only leave no room to doubt the preſence of inflammation, but alſo point out its ſeat. When we know the ſeat of the pain, as we know that of the different viſcera, we conjecture which is affected; but when we, at the ſame time, obſerve what function is affected, the matter is generally placed beyond a doubt. Thus if the patient informs us that the pain is in the cheſt, we ſuſpect the lungs to be the ſeat of the inflammation; but if, at the ſame time, we perceive the breathing to be difficult, and no other function more deranged than is uſual in the ſame degree of fever, we no longer heſitate in pronouncing the diſeaſe to be inflammation of the lungs.

'If along with theſe ſymptoms there are irregular motions of the heart, we *ſuſpect* that the inflammation has ſpread to this organ or its membranes; and in proportion as this ſymptom or the difficulty of breathing is moſt conſiderable, we judge the chief ſeat of the inflammation to be in the one place or the other. If hickup ſupervene, we ſuſpect it has ſpread to the diaphragm. In like manner, when the patient tells us that the pain is in the region of the ſtomach, and he is diſtreſſed with thirſt and inceſſant vomiting, we know that he labours under inflammation of the ſtomach; and ſo on.

'But the manner in which we form our opinion reſpecting the ſeat of the inflammation is not ſo ſimple in every caſe as in theſe, which ariſes from the ſympathy of parts; for it often happens, that although the inflammation is confined to one organ, yet the pain, and even derangement of function, extends to parts in its neighbourhood. Thus, in inflammation of the kidneys, pain is often felt in the ſtomach; and its functions are often as much deranged as thoſe of the inflamed part.

'Nay, a pain is often felt in a diſtant part while there is no pain whatever referred to the part affected. In inflammations of the liver, for example, the pain is ſometimes confined to the right ſhoulder. It alſo ſometimes happens, that the functions of neighbouring parts are more obviouſly deranged than that of the part affected. In inflammation of the liver the patient is often attacked with dyſpnœa and cough, or with vomiting, or with hickup; while on diſſection it is found that the liver alone was the ſeat of inflammation.

'It is not meant that inflammation of the liver never ſpreads to theſe parts, occaſioning ſuch ſymptoms; this, indeed, we ſhall find, is a frequent accident; but it is well known, that the inflammation has not, in every caſe where the foregoing ſymptoms attend, ſpread to neighbouring parts.

'In ſuch caſes, which we ſhall ſoon have occaſion to conſider at length, it is often very difficult to determine preciſely the ſeat of the inflammation; ſometimes, we ſhall find, it is impoſſible; but fortunately it is not always neceſſary, and a perſon well acquainted with the ſymptoms of the phlegmaſiæ will never find himſelf at a loſs to determine the ſeat of the inflammation with all the accuracy that is requiſite in practice; for although neither the pain nor leſion of function is always obſerved in the part affected, yet both the one and the other are always the ſame, or ſimilar, when the ſame part is affected, at leaſt in the ſame degree; and in the affection of no other part does the ſame combination of ſymptoms occur. Thus ſome difficulty of breathing, ſickneſs at ſtomach, hickup, with pain in the right ſhoulder, and a hard and frequent pulſe, as certainly denote inflammation of the liver as if the pain were referred to this organ, and accompanied with an evident derangement of its function.

'In ſome of the phlegmaſiæ ſome other circumſtances, particularly an increaſe of the pain on preſſure, aſſiſt the diagnoſis.'

Reſpecting

Reſpecting the treatment of the phlegmaſiæ, a remarkable difference occurs, the author obſerves, in relation to that of idiopathic fevers. In the phlegmaſiæ the local affection often requires the moſt vigorous antiphlogiſtic means, while the excitement is below the healthy degree; and in regulating the employment of ſtimuli, it is ſtill the ſtate of the local affection that we keep in view. The moſt charaſteriſtic difference is, that in the phlegmaſiæ we employ antiphlogiſtic means more liberally, and the ſtimulating plan more ſparingly.

An important diſtinction is here made between real debility and depreſſion of ſtrength, a diſtinction, as the author juſtly obſerves, which has only been properly inſiſted on by Dr. G. Fordyce. They are chiefly diſtinguiſhed by the latter coming on ſuddenly, and only attending inflammation of particular viſcera; while real debility almoſt always comes on ſlowly, and may attend any of the phlegmaſiæ if long protracted. Thus, as in ſome phlegmaſiæ, the greater the general depreſſion and debility, the more violent is the inflammation, ſo we ſometimes puſh antiphlogiſtic meaſures as far as can be done with ſafety, on account of the very ſymptoms, which, in idiopathic fevers, render the tonic plan indiſpenſible. In ſome of the phlegmaſiæ, a weak and even irregular pulſe indicates the neceſſity of liberal evacuations.*

The

* It is a point of great importance to determine whether or not the ſymptoms of depreſſion mentioned above, when they occur in certain inflammations, ought to influence the general plan of treatment; whether, in a word, ſtimulants can be ſafely employed in ſuch caſes, under any circumſtances. The following caſe, which occurred lately, may, perhaps, illuſtrate this. A ſtrong and healthy man, of about forty years of age, was attacked with ſymptoms of pulmonic inflammation, in conſequence of expoſure to cold and moiſture. In a few hours, the complaint became greatly aggravated, with violent pain on the left ſide of the cheſt, ſhooting through to the ſhoulder-blade, and with great difficulty of breathing. The pulſe was quick and ſmall, and remarkably unequal; and the general anxiety and depreſſion were extreme. Attempts were made to draw blood from the arm, but which, on account of the ſmallneſs and unfavourable ſituation of the veins, did not ſucceed.

 Copious

The treatment of the phlegmaſiæ is divided into two kinds: the one, where reſolution is the object we deſire; the other, when ſuppuration is to take place. Reſolution is to be procured, 1, by removing the remote cauſes, if they ſtill continue to act; 2, by diminiſhing the congeſtion in the inflamed part; and, 3, by diminiſhing the vis a tergo. With regard to the ſecond indication, that of diminiſhing the congeſtion in the part, the means are two-fold; thoſe which relieve the congeſtion by exciting the debilitated veſſels to expel part of their contents, as aſtringent and ſtimulant applications; and thoſe which directly remove part of thoſe contents, and which again are of two kinds, viz. ſuch as relieve the diſtended veſſels by *debilitating* thoſe of ſome neighbouring part; in conſequence of which, a congeſtion being formed there, that of the inflamed part is relieved; as inflammation excited by bliſters and rubefacients.—It is ſcarcely neceſſary to obſerve here, the ſhare the author's theory of inflammation has in forming the indication in queſtion. The ſupporter of a different hypotheſis would have attributed the good effects of bliſtering, and the like, to the increaſed action produced. Happily, the practice, the benefits of which experience has amply confirmed, ſquares itſelf with either.

The other mode of removing part of the contents of the diſtended veſſels, is, topical bleeding by leeches or cupping-glaſſes, with ſcarification.

The third general indication in the treatment of the phlegmaſiæ, is, that of diminiſhing the *vis a tergo* by general evacuations. This part of the treatment, the author obſerves, bears a great reſemblance to that

Copious ſweating was, therefore, ſpeedily induced by large doſes of the volatile alkali and paregoric elixir combined, which was almoſt immediately followed by relief; the pain abating, and the pulſe acquiring fulneſs and regularity. In this caſe, the cure was completed in little more than twenty-four hours; and more, certainly, could not have been expected from the ſtricteſt antiphlogiſtic plan. E.

of

of idiopathic fevers: the difference relates chiefly to the management of thofe agents which fupport the vital functions, viz. caloric and the circulating fluids.

'As cold is a frequent caufe of the phlegmafiæ, the reader will not be furprifed to find, that it is never applied fo freely in thefe complaints as in many idiopathic fevers. The oppofite extreme, however, is not lefs pernicious; the temperature fhould be moderate, and the drink tepid.

' The phlegmafiæ, it has been obferved, as well as idiopathic fevers, have their crifes. When a tendency to fweat appears in the former, it is to be encouraged by more warmth than is advifable in idiopathic fevers. But even here the hot regimen is not to be pufhed far: if the fweat does not flow readily, it will probably be of little fervice.'

With refpect to blood-letting, this is to be regulated, the author remarks, in the fame way as in fimple fynocha, except that the fame degree of excitement warrants a more copious evacuation, both becaufe other means are lefs powerful in the phlegmafiæ, and becaufe in thefe complaints the excitement is never fo confiderable (with the exception of phrenitis, in which the excitement is often as high as in any cafe of fever), nor fucceeded by fo great a degree of typhus as frequently happens in idiopathic fevers.

The author having fpoken of the effect of other evacuations, as purging, vomiting, and diaphorefis, proceeds to point out the treatment of the phlegmafiæ, when the view is to procure fuppuration. In remarking on the tendency in abfceffes to point towards the part where there is the leaft refiftance, he will be thought, we apprehend, too mechanical. It was obferved by Mr. Hunter, and it appears to be fully confirmed by experience, that collections of pus very generally make their way towards the furface of the body, or where the fafeft and moft ready outlet can be had. This appears in abfceffes which take place beneath the abdominal mufcles, and in many other inftances. The

 propriety

propriety of the author's advice, therefore, to have recourſe in ſuch caſes to an early artificial opening, may, we think, be queſtioned.

Having delivered his general doctrine of the phlegmaſiæ, the author enters into the ſeparate conſideration of the different ſpecies, which he arranges according to the different organs occupied by the inflammation. Phlegmon and Eryſipelas conſtitute the firſt and ſecond ſpecies. With reſpect to the latter diſeaſe, 'Such is the confuſion of terms,' the author obſerves, 'in this part of medicine, that there are no leſs than three different affections, each of which has been known by the ſame appellations, and for each of which at leaſt two appellations have been uſed indiſcriminately. Before we can ſpeak of theſe diſeaſes, it is neceſſary at leaſt to know the meaning of the terms we employ. A chronic inflammation of the ſkin never occaſioning fever, is termed by ſome writers erythema, by ſome eryſipelas, by ſome the terms are uſed indiſcriminately. The ſame terms have been applied with as little diſcrimination to another inflammation of the ſkin which is always a febrile diſeaſe, but which forms a complaint of a very different nature when complicated with ſimple fever; to which combination, however, the ſame terms eryſipelas and erythema have been applied.

'Dr. Cullen employs the term erythema to expreſs the inflammation occaſioning fever. By the term eryſipelas he expreſſes the combination of the erythema and ſimple fever; and with reſpect to the ſimple inflammation, as there is no place for it in his ſyſtem of noſology, he gives it no name.'

Theſe terms are here employed in a different way: the ſimple diffuſe inflammation is termed erythema; the diffuſe inflammation of the ſkin occaſioning fever, and which is a real phlegmaſia, is termed eryſipelas; and, with reſpect to the combination of eryſipelas and ſimple fever, there is no more reaſon, it is obſerved, for

giving

giving it a name, than for giving a name to any other combination of two complaints.

The other phlegmaſiæ treated of in the preſent volume are, *phrenitis*, *ophthalmia*, *otitis*, *odontalgia*, and *cynanche:* of the laſt of theſe only two forms are here noticed, viz. *cynanche tonſillaris*, and *maligna:* the *cynanche trachealis* is deferred to the next volume, in order to make room for an appendix, containing an experimental inquiry into the circumſtances influencing the urinary depoſitions which appear in febrile diſeaſes.

The chief object of the author in theſe experiments, which, it ſeems, were firſt publiſhed in 1792, was to determine the circumſtances which give a prediſpoſition to urinary gravel; and, with this view, the effects of a diet almoſt wholly animal were contraſted with one of the moſt aceſcent kind. It appeared, in general, that, when the former was uſed, the urine, after being ſuffered to ſtand for ſeveral hours in clean veſſels, depoſited a cream-coloured ſediment, which preciſely reſembled the furfuraceous ſediment obſerved in the decline of febrile diſeaſes, or at any period when there is much ſweating; whilſt, on the other hand, when an aceſcent diet was had recourſe to, a depoſition reſembling fine red ſand, termed by *Scheele* the *lithic acid*, took place. As, however, the reſult was varied by different circumſtances, and as it is impoſſible to notice in detail the numerous experiments recited, we muſt confine ourſelves to the general obſervations to which they gave riſe.

Urine left to itſelf, the author obſerves, depoſites either a whitiſh matter rendering it turbid, which he calls the cream-coloured ſediment, and this often in an hour or two after it is made; or cryſtals of lithic acid, which generally appear after the urine has remained out of the body for a longer time; or ſometimes both. From the experiments here detailed, it appears, 1, That the cream-coloured ſediment and the lithic acid were

were never obſerved in conſiderable quantity in the ſame urine; where there was much of either, there was little or none of the other.

2. While the lithic acid was found in greateſt quantity in the urine of a perſon uſing aceſent diet, the cream-coloured ſediment was increaſed by food of a contrary tendency.

3. Any cauſe promoting perſpiration, while it diminiſhed the quantity of lithic acid, tended to produce the cream-coloured ſediment.

The following obſervations on the effects of acids on the urine after it is out of the body, will place the reſult of the preceding experiments in a clearer point of view.

'I learned a curious fact from an anonymous pamphlet*, after the treatiſe in which the foregoing experiments were firſt publiſhed was nearly completed. The author obſerves, that on adding any acid, even the carbonic, to urine, he always procured a copious depoſition of what he calls the concreting acid, which is the ſame I have mentioned under the name of lithic acid.

'This experiment I have repeated frequently, both with recent urine and that which had been kept ſome time, uſing the ſulphuric, nitrous, muriatic, and acetous acids, the acid of lemons, &c., and in all inſtances found the reſult as ſtated in the above pamphlet.

'Another effect of acids on the urine is that of changing its colour, which they redden conſiderably, and render darker†, theſe effects appearing more ſuddenly if the temperature be raiſed.

* 'This work is entitled, *A Treatiſe upon Gravel and upon Gout, in which the Sources of each are inveſtigated, and effectual Means of preventing or removing thoſe Diſeaſes recommended:* publiſhed in 1786.

† 'Vinegar and lemon juice produce the precipitation of the lithic acid without changing the colour of the urine. When the colour of the urine is darkened by any acid, that of the cryſtals of lithic acid produced is alſo darkened in nearly the ſame degree.

'If

' If urine be expoſed for ſome time to the elaſtic fluid evolved from a mixture of chalk and ſulphuric acid, its colour appears ſomewhat reddened, and the depoſition of the lithic acid is increaſed. But theſe effects are leſs perceptible from the carbonic than from any other acid, except that lemon juice and vinegar ſeem to change the colour in a ſtill leſs degree.

' The ſtrong nitrous acid excites an effervecſcence with urine, whether recent or not, during which a permanently elaſtic fluid is diſengaged, which precipitates the calcareous earth of lime water, and undergoes no contraction on the addition of atmoſpheric air. The vitriolic acid produces the ſame effect, but in a leſs degree. The diluted nitrous acid occaſions very little effervecſcence. This effect of acids alſo is increaſed by raiſing the temperature.

' The muriatic acid excites no effervecſcence with urine, whether applied in its common or oxigenated ſtate. If urine be expoſed to the vapour ariſing from muriatic acid and calx of mangaueſe, it is totally abſorbed, but no elaſtic fluid is evolved; neither is any evolved on adding to the urine the acetous acid, or the acid of lemons, although the temperature be conſiderably raiſed. Acids, I found, while they occaſioned a depoſition of lithic acid, prevented the appearance of the cream-coloured ſediment; and on adding an acid to urine which contained the cream-coloured ſediment, this diſappeared while the lithic acid was depoſited, leaving the urine, formerly turbid with the cream-coloured ſediment, perfectly tranſparent. Urine containing cream-coloured ſediment will not become tranſparent merely by ſtanding for ſome time at reſt; after keeping it for months without the addition of an acid, I have always found it as turbid as at firſt The urine which contains moſt cream-coloured ſediment, on the addition of an acid, depoſites moſt lithic acid, and requires the longeſt time to become tranſparent.

' As every acid which is mixed with the urine produces a precipitation of lithic acid, we muſt infer, when

when we ſee more than uſual of this acid in the urine on uſing aceſcent diet, that the acid derived from ſuch diet acts in the ſame way, producing the copious red ſediment we obſerve on ſuch occaſions. But, however acid the diet may be, if we artificially increaſe perſpiration, or if this be naturally vigorous, the acid will paſs by the ſkin (for it has been ſhewn, that an acid paſſes even by inſenſible perſpiration), and hence produce none of its effects on the urine.

'It is a queſtion of ſome importance, whether the body, by its own powers, generates an acid capable of precipitating the lithic acid from the urine? Or is ſuch an acid always derived from aceſcent diet? Several of the above experiments ſeem to ſhew, that this acid is conſtantly generated in the body, independently of all acid derived from the alimentary canal; and that it may paſs in great quantity by the kidney, while the perſon uſes aliment which can produce no acidity. We have ſeen the urine depoſiting much lithic acid, when there was little food taken, and that which was entirely animal, continued not for a day or two, but ſeveral weeks.

'Reflecting on what has been ſaid, we ſhall find that there are three different ſtates in which the urine may exiſt, indicating different conditions of its ſecreting organs.

'The firſt is, when the veſſels of the kidney are conſtricted; in this caſe, the urine flows limpid, and depoſites little ſediment of any kind: we ſee it in this ſtate in the cold ſtage of fevers, from the application of cold to the ſurface of the body, &c. The ſecond is, when the urine is high coloured, but depoſites little lithic acid; the kidney ſeems now in a ſtate of relaxation, rather than of vigorous action: this I infer, from having always obſerved the urine ſecreted during ſleep, however ſhort a time retained in the bladder, fully as high coloured as that ſecreted during vigilance, when every part of the ſyſtem is in greater activity; this urine more frequently contains the cream-coloured

ſediment,

ſediment, than that ſecreted when the kidney is moſt active, but leſs lithic acid. When the vigorous action of the kidney takes place, it forms the third ſtate: here the colour of the urine is not higher than in the caſe of mere relaxation; it, however, depoſites more of the lithic acid, but generally leſs cream-coloured ſediment.

'This ſtate of the kidney is induced by any cauſe obſtructing perſpiration.

'The ſkin and kidneys ſeparate the ſame acid from the blood; when the action of the one is diminiſhed, that of the other is increaſed, in order to prevent an accumulation of acid in the ſyſtem: hence it is, that, the proper action of the ſkin being prevented, more of this acid paſſes by the kidney, and conſequently there is a greater depoſition of lithic acid from the urine. Whether this action of the kidneys may be produced by diuretics, and the ſyſtem freed from any over proportion of the acid, is a queſtion which cannot poſitively be anſwered. But if we conſider what has juſt been ſaid, we muſt ſuppoſe that increaſing the action of the kidneys by diuretics is better calculated to free the ſyſtem of this matter, than the uſe of fluids acting merely as diluents, and which ſeem not to affect the depoſition of lithic acid, except that, by increaſing the proportion of fluid, they render it rather leſs apt to be depoſited: for Scheele and Bergman have ſhewn that this acid, though in ſmall quantity, is ſoluble in water.

'From what I have obſerved in myſelf, as well as from other conſiderations, I cannot help thinking that the kidney experiences theſe three ſtates once a day, in a greater or leſs degree, according as the conſtitution is more or leſs irritable.

'At night there is often formed ſome degree of a febrile ſtate, even in the moſt healthy; and to this I would attribute my generally obſerving the urine paler in the evening than at other times of the day, except

where

where a diaphoretic had been uſed, evidently preventing the febrile ſtate.

'The ſecond ſtate of the kidney ſeems to take place during ſleep, eſpecially towards morning. During ſleep, there is a relaxation of the febrile ſtate formed in the evening; and hence one reaſon of the morning urine being higher coloured than that made at other times: this urine likewiſe moſt generally depoſites the cream-coloured ſediment. When I firſt began theſe experiments on the urine, I expected to find, according to the general opinion, that the morning urine, as being higheſt coloured, would alſo depoſite moſt lithic acid; but repeated experiments convinced me that this was not the caſe; ſo much the contrary ſometimes happened, that, having kept the morning and mid-day urine of the ſame day, each 48 hours, I found not above a few particles depoſited from the former; while in the latter there was a copious ſediment of lithic acid, and this notwithſtanding the morning urine was both higher coloured, and in greater quantity.

'The mid-day urine forms the third ſtate: this I generally obſerved of a colour not ſo dark as the morning urine, nor ſo light as that of the evening; but depoſiting a greater quantity of lithic acid than either.

'We muſt ſuppoſe the ſame diurnal revolution to take place in the ſkin. In the evening, during the febrile ſtate, it is conſtricted; during ſleep, relaxed; and in vigorous action during the day-time. There is reaſon, we have ſeen, to ſuppoſe that the acid occaſioning the precipitation of lithic acid is only thrown off by this organ, as by the kidney, in proportion to its vigorous action; hence there will conſtantly be an accumulation of acid during the night to be thrown off the following day by the renewed vigour of the ſkin and kidneys.

'As this acid, in many at leaſt, perhaps in moſt caſes, lays the foundation of calculous complaints, the foregoing obſervations tend to eſtabliſh a fact of conſiderable

conſiderable importance with regard to the pathology of ſuch complaints; that it is by the vigorous action of the ſkin and kidneys that any dangerous accumulation of acid muſt be guarded againſt, no abſtinence from aceſcent ingeſta being ſufficient for this purpoſe.

'Upon the whole, from the foregoing experiments and obſervations, we may conclude, in the 1ſt place, That any cauſe obſtructing perſpiration produces a greater than ordinary precipitation of lithic acid from the urine. 2dly, That the ſame precipitation is, *cæteris paribus,* increaſed by aceſcent diet, and much diminiſhed by uſing a large proportion of animal food. 3dly, That, by the inactivity of the ſkin and kidneys, an accumulation of acid may take place in the ſyſtem, only to be thrown off by reſtoring their action. 4thly, That, by the uſe of diaphoretics, we can often entirely prevent the depoſition of lithic acid from the urine, cauſing in its ſtead that of the cream-coloured ſediment.'

The volume concludes with a few remarks on febrile anorexia: theſe ſeem to ſhew that anorexia is the conſequence of the ſecretion of gaſtric juice being interrupted. It appears alſo, that, by emptying the ſtomach of its gaſtric liquor, anorexia may be produced at will. After long faſting, and when exceſſive hunger was felt, the author emptied his ſtomach by repeated vomiting, excited by means of luke-warm water. The water came up clear, and only mixed with a ropy tranſparent fluid, ſuch as the gaſtric liquor is deſcribed by Spallanzani. After undergoing this operation, every ſenſation of hunger was removed, and rather a diſguſt for food produced.

From the above experiment a powerful argument might have been brought againſt the too prevalent cuſtom of cramming debilitated patients, eſpecially in the ſtate of fever, with what is called nouriſhment. Where there is no appetite for food, there is probably no gaſtric juice capable of diſſolving it.

Art. XLV. *An Inquiry into the Structure and Animal Œconomy of the Horſe. Comprehending the Diſeaſes to which his Limbs and Feet are ſubject, with proper Directions for Shoeing, and pointing out a Method for aſcertaining his Age until his Twelfth Year. To which is added, an Attempt to explain the Laws of his progreſſive Motion, on Mechanical and Anatomical Principles. The whole illuſtrated by eighteen Copperplates. By* Richard Lawrence, *Veterinary Surgeon, Birmingham.* 4to. 212 pages, price 1*l* 11*s* 6*d*. London, 1801. Wallis, &c.

WE have already had occaſion to congratulate the public on the attempts which have of late been made towards the eſtabliſhment and improvement of a moſt important branch of animal phyſics; a branch that has hitherto, almoſt without exception, lain in utter neglect, or been confined to the moſt ignorant and unfeeling of mankind. That thoſe efforts have been attended with no inconſiderable ſhare of ſucceſs, more than one proof has been adduced, and a freſh one is afforded in the execution of the work before us. Mr. Lawrence has ſhewn himſelf to be intimately acquainted with the œconomy of this moſt uſeful animal, while his ſtyle of writing is that of a ſcholar and a gentleman. To perſons intereſted in the veterinary branch of art, the preſent treatiſe is calculated to afford both amuſement and inſtruction.*

The work is divided into eleven chapters, the ſubjects of which are the following:—The external conformation of the horſe—of the eye—of ſhoeing, and the diſeaſes of the foot—on the greaſe—on lameneſs—on wounds—on reſpiration, natural and diſeaſed—on the ſtructure and œconomy of the ſtable—on the age of the horſe—on the education of the horſe—and, on progreſſion.

* The reader is requeſted to take notice, that the author is a different perſon from the writer of the ſame name of a celebrated *Treatiſe on Horſes*, that has been ſome time before the public.

Inſtead

Inftead of examining particularly into the merits and execution of each of thefe, of which, indeed, we by no means profefs ourfelves competent judges, we fhall enable the reader to form his own opinion of the ftyle and manner of the author, by tranfcribing his remarks on the difeafes of refpiration.

'The horfe is more frequently attacked with inflammation of the lungs than any other quadruped. This may probably arife from the abufes and irregularities which he is obliged to fubmit to, in his domefticated ftate; for by clothing, and the unnatural temperature of the ftable, he is rendered much more fufceptible of cold than he would be, under other circumftances. When the attack is violent, the inflammation is frequently fo great as to produce mortification in a few hours; and, even if it is overcome by bleeding and medicine, it generally lays the foundation for a permanent cough or broken wind. This may be brought on by an effufion of water in the cheft, or by lymph being thrown out into the cells of the lungs; and poffibly by a paralyfis of the diaphragm, or by the deftruction of part of the lungs in confequence of the inflammation. In any of thefe cafes, refpiration will be laborious, and the animal will become unfit for violent exertion. However, the moft common appearance of the lungs in broken-winded horfes, is, a general thickening of their fubftance, by which their elafticity is in a great meafure deftroyed, and their weight fpecifically increafed; at the fame time, their capacity for receiving air is diminifhed. During life, the lungs entirely fill the cavity of the cheft, fo as to leave no fpace between their outward furface and the inward furface of the ribs; thus they dilate and contract, following up by their own elafticity the action of the ribs and diaphragm. Hence it is probable that adhefions of the lungs to the ribs are not fo injurious to refpiration as might be imagined.

'If the cheft is punctured in the dead fubject, the external air rufhes in, and the lungs collapfe; but if

the horſe was broken-winded, the lungs do not collapſe, which proves that they have loſt their elaſticity. This ſtate of the lungs ſufficiently accounts for the difficulty of reſpiration; for, as their faculty of dilatation is deſtroyed, the ribs cannot expand without forming a vacuum in the cheſt, which the preſſure of the external atmoſphere prevents; as may be readily perceived in the caſe of broken-wind, for then the intercoſtal muſcles are ſo ſtrongly retracted, as to form a deep furrow between every rib, as well as a depreſſion in the flanks. On this account, air is received into the lungs with great difficulty; but its expulſion is not ſo difficult, as the return of the ribs and diaphragm naturally force it out by their preſſure. Thus, in broken-winded horſes, inſpiration is very ſlow, but expiration is ſudden and rapid, as may be ſeen by the flanks returning with a jerk. If there is water in the cheſt, the horſe never lies down, as the preſſure which would take place in that ſituation would produce ſuffocation inſtantly.

'The foregoing are the general ſymptoms attendant on broken-wind: it remains to enquire into the leſs violent affections of the lungs. The moſt frequent of theſe are manifeſted by coughs, which may be divided into the inflammatory and chronic kinds. In the inflammatory cough there is generally ſome diſcharge from the lungs, but in the confirmed chronic cough there is ſeldom any diſcharge whatever. As the horſe does not expectorate through his mouth, the mucus of the lungs is coughed up into the noſe, from whence it is afterwards diſcharged by the action of ſnorting or ſneezing. Hence, if a horſe ſnorts after he coughs, he is generally ſuppoſed to be (although the reaſon is not known) ſound in thoſe viſcera. In the human ſubject, aſthma is commonly divided into two kinds, the humoral and the ſpaſmodic. Veterinary practice has not hitherto furniſhed any proofs that the horſe is ſubject to aſthma of the ſpaſmodic kind; and, from what may be collected from the ſymptoms of broken wind, it

it is probable that the latter diſeaſe in horſes is totally different from the aſthma in the human being; for the attacks of aſthma are uſually periodical, whereas the effects of broken wind are conſtant, though not always equal, their violence being increaſed by exerciſe, which naturally demands more frequent and more copious reſpiration, as well as by ſome other cauſes. Diſſections of the dead ſubject afford little or no proof of the nature or exiſtence of nervous complaints; hence it is not poſſible to aſcertain whether a paralyſis of the diaphragm may conſtitute one cauſe of broken wind. We muſt, therefore, recur to ſuch cauſes as admit of ocular demonſtration; and, of theſe, none are ſo diſtinct as the general thickening of the ſubſtance of the lungs juſt mentioned.

'With regard to water in the cheſt, it is frequently problematical, on examination of the dead ſubject, whether the extravaſation took place before or after death.

'Another imperfection which may be included in the claſs of diſeaſed reſpiration, is, the ſound which ariſes in breathing, with ſome horſes, when their pace is accelerated: a horſe of this deſcription is termed a *Roarer*. From my own obſervation, I have not been able to diſcover whether its ſource is in the lungs, the trachea, or the noſe, though it is probable its ſeat is in the trachea or larynx. Dealers have a method of aſcertaining the exiſtence of the diſeaſe by ſtriking the horſe under the belly with a whip, and turning him ſuddenly round at the ſame time. If he groans during this proceſs, they ſay it proves that he is a roarer. This is probably occaſioned by the ſudden contraction of the abdominal muſcles forcing air from the lungs through the trachea with greater rapidity, in conſequence of the pain he feels from the ſtroke of the whip, as well as from the bending of the ribs in the action of turning round in a ſmall compaſs. This diſeaſe prevails to a different degree in different ſubjects; in its commencement it is generally manifeſted

by a whistling noise; but in the confirmed state it is more sonorous, and resembles deep groaning. In either case it has hitherto remained incurable.

'The orifice of the trachea is frequently injured by the custom of pinching it with the hand, to discover by the manner of coughing whether or not a horse is sound in his wind. A case of this kind occurred during my residence at the Veterinary College. A horse was brought to the infirmary which was afflicted with an excessive difficulty of breathing, accompanied with great noise from the nostrils, and a copious discharge of saliva from the mouth. As the horse eat and drank as usual, and in all others respects was in perfect health, it was suspected that the laborious respiration arose from some obstruction about the larynx, or at the entrance into the nasal cavities. In order to give immediate relief, Mr. St. Bel, who was at that time professor, performed the operation of bronchotomy, or, in other words, made an opening into the windpipe about four inches from the lower jaw. Into this opening a leaden tube was introduced, which was kept in its situation by a ligature round the neck. The animal was instantly relieved, and respiration was carried on entirely through this hole in the trachea. The tube was removed and cleaned every day, and the horse appeared perfectly easy in every respect for nearly three weeks, until the ligature happening to get loose in the night, the tube dropped out, and he was suffocated. On dissection, it appeared that the membrane lining the mouth of the windpipe was so thickened, as to have entirely filled up the cavity, and thereby prevented the air from passing and repassing freely.

'As free respiration is the basis of health and vigour, so will the contrary produce general debility. Thus, the digestive powers of the stomach being weaker in horses that are broken-winded, flatulency is produced; and the air which is generated in the intestines makes its escape backwards whenever the animal coughs. This circumstance probably gave birth to the ridiculous

lous cuſtom of making an artificial and ſupplementary anus, with a view of facilitating the egreſs of the wind, which was erroneouſly ſuppoſed to be the cauſe of the diſeaſe. Broken-winded horſes are commonly much better at graſs than in the ſtable. This ariſes from their being ſurrounded with a more ſalubrious atmoſphere, and from the green food being more eaſy of digeſtion than hay and corn. On this account carrots are given to horſes of this deſcription with advantage.

'Some horſes acquire a habit of biting their manger, accompanied with a convulſive motion of the windpipe; in the language of the ſtable, they are diſtinguiſhed by the name of *Crib-biters.* During this action, it is ſuppoſed that they ſuck air into the ſtomach; but ſeveral reaſons may be adduced to prove that this is not the fact.

'Horſes that are addicted to this habit generally perform it whilſt they are maſticating their food.

'During the convulſion there is a great loſs of ſaliva, which eſcapes whilſt the mouth is open and fixed upon the edge of the manger. As the ſaliva is a very eſſential agent in digeſtion, it will be reaſonable to conclude that the loſs of it muſt be prejudicial to the animal, inaſmuch as the digeſtive powers of the ſtomach will be inſufficient for their proper functions. From this cauſe, therefore, enſues the flatulence, or collection of wind in the ſtomach and inteſtines of horſes of this deſcription. Again; that the wind is not drawn into the ſtomach through the mouth and œſophagus, may be proved by the mechaniſm of the organs of reſpiration which have been deſcribed. If the animal ſucked in air during the action of crib-biting, it muſt neceſſarily enter the lungs, as the orifice of the windpipe is always open, except at the moment of deglutition, and air cannot be ſucked inwards without a cavity being formed for its reception; as in the caſe of inſpiration. The only way in which air could enter the ſtomach would be by the action of ſwallowing; but air could not be ſwallowed whilſt the mouth is open. This diſeaſe,

therefore, ſeems to conſiſt in a ſpaſmodic affection of the œſophagus and trachea, excited by ſome ſympathy with the muſcles of the jaws. But, from whatever cauſe the habit of crib-biting may ariſe, it is always deemed incurable.

'It is cuſtomary, however, to buckle a ſtrap round the upper part of the neck, in order to prevent the movement of the windpipe. A horſe ſubject to this complaint decreaſes much in value, as he is generally lean and emaciated, and therefore incapable of performing hard labour. He alſo wears out his teeth, whereby he is prevented from grazing properly.

'It is a prevailing opinion amongſt grooms, that a horſe's wind may be affected by giving him too much water, and under this impreſſion they would (if poſſible) deprive him of it entirely.

'It certainly is not prudent to permit the animal to drink very copiouſly immediately before he is put into motion, as the increaſed dimenſions of the ſtomach would confine his powers of reſpiration. But this furniſhes no reaſon why he ſhould not be allowed a ſufficient quantity at proper periods. The food which he takes in the ſtable is perfectly dry, and very different from what he would eat in a ſtate of nature; conſequently, he will require more fluids for the purpoſe of digeſtion. The great conſumption of perſpirable fluid which the horſe experiences during exerciſe, alſo renders a proper ſupply of water abſolutely neceſſary. The imperfect digeſtion in horſes that are thick-winded produces fermentation and an unnatural heat in the ſtomach; on which account, horſes of this deſcription are more eager for water, and that in proportion to the privation of it.

'It is cuſtomary to water them twice daily, viz. in the morning and in the evening; the quantity a pailful at each time. But it would be much more beneficial to give them half a pailful at four times, inſtead of double that quantity at twice.'

We

We cannot forbear quoting a remark of the author in proof of the profound knowledge of the profeſſors of the art of farriery. A celebrated treatiſe on this ſubject by Mr. *Taplin* has paſſed through eleven editions, with a chapter on the diſeaſes of the gall-bladder.—The horſe has no gall-bladder ! !

ART. XLVI. *An Eſſay on a Chronological Hiſtory of Medicine: by* KURT-SPRENGEL. Second edition. 1801.

THE author of the eſſay here announced holds the very firſt rank in the ſcale of talents and erudition in Germany; it is not ſurpriſing, therefore, that his work ſhould have been eagerly peruſed by the faculty of that country. For the following account of it, and which we doubt not will be favourably received by our readers, we are indebted to an accurate and judicious analyſis furniſhed by Dr. *Friedlaender*, and publiſhed in a late number of the *Bibliotheque Germanique* (Nos. 35 and 36).

In his introduction, M. *Sprengel* points out the advantages derivable from a good hiſtory of medicine, and of all its parts conſidered ſeparately, as well as in their relations to the other ſciences. He traces the cauſe of the changes medical ſcience has undergone to the ever-varying ſtate of the human mind, and to the modifications it has ſucceſſively received from the culture of the other ſciences. After having ſpoken of the talents neceſſary to conſtitute a good hiſtorian of this ſort, the author eſtabliſhes eight periods in medicine, in particular relation to the progreſs and revolutions of the ſciences in general.

Firſt epoch. Time of the Argonauts, from 1273 to 1263, before the Chriſtian æra. In this are obſervable the firſt traces of the Greek medicine.

Second epoch. Peloponneſian war, 432—404 ante J. C. Medicine of Hippocrates.

Third epoch. Foundation of the Chriſtian religion, 30 years before C. The methodic ſchool.

Fourth epoch. Great irruption of the Viſigoths, 430—530. Downfall of the ſciences.

Fifth epoch. Age of chivalry, 1096—1230; medicine flouriſhing in Arabia.

Sixth epoch. The reformation, 1471—1530. Re-eſtabliſhment of the Greek medicine and anatomy.

Seventh epoch. Thirty years war, 1618—1648. Great diſcovery of Harvey, and reformation of Van Helmont.

Eighth epoch. Reign of Frederic the Great, 1740—1786. Age of Haller.

Medicine, the author obſerves, became a ſcience four hundred years before the Chriſtian æra, at the period when it was taught by the dogmatic ſchool founded by Theſſalus, Draco, and Polybius, on the baſis eſtabliſhed by Hippocrates. Soon afterwards, phyſicians, led away by the prevailing ſpirit of the times, each modelled his ideas according to thoſe of the ſchools of philoſophy of Plato, Ariſtotle, Epicurus, or Zeno; and Alexandria, the cradle of anatomy, the only ſchool at this time, was likewiſe the ſeat where theſe various ſcenes ſucceeded each other.

Galen next appeared, and changed the received doctrine for another, the baſis of which he found in the books of Ariſtotle; and his dogmas were for a long time in vogue with his ſucceſſors, till they became enveloped and loſt in the barbariſm of the times.

After a long night, ſome rays of light began to appear in the fifteenth century, and announced the return of the ſciences: the works of Hippocrates began now to be read and ſtudied with avidity, and, with thoſe of Galen, ſerved as guides to phyſicians till the commencement of the ſucceeding century. Then aroſe Paracelſus, who, addicted wholly to the cabaliſtic philoſophy and to alchymy, ſet up his pretended diſcoveries in place of

of the light of experience. Sylvius and Van Helmont recalled, in ſome degree, to the proper path, ſuch as had been led away by this enthuſiaſm ; but it was not till the time of Harvey that Galen and Paracelſus loſt their influence. To theſe ſucceeded Des Cartes, who introduced mathematics into the ſcience of medicine, and his example was followed by the diſciples of Newton.

Sydenham, enlightened by the philoſophy of Bacon, brought back phyſicians at length to rational empiriciſm. The diſcovery of new remedies, and eſpecially that of the cinchona, contributed not a little to the ſucceſs of his ſyſtem ; when Stahl and Hoffman promulgated new dogmas. The theory of the former was founded on the myſtic opinions of animaliſm, much in vogue in his time ; that of Hoffman reſted principally on Leibnitz's doctrine of the monades, which had acquired much celebrity in the German univerſities. All the other ſyſtems of medicine which have ſince appeared, down to that of Brown, have been only modifications of ſome or other of theſe.

The dynamic ſyſtem was that which prevailed at the cloſe of the eighteenth century, although the ſchool of Sydenham had ſtill many partizans, and the mathematic ſect had not wholly diſappeared.

Such is the general outline of medical hiſtory furniſhed in the introduction to the work. The firſt volume, the only one here noticed, is divided into four ſections, the firſt of which commences with ſome reſearches into the origin of medicine ; but on this head little but conjecture can be expected : on this part, therefore, we ſhall not dwell. All that can be diſcovered in this chaos, is, that in the infancy of the art amongſt the Egyptians, where the firſt traces of it will be found, it was cuſtomary to write the axioms of medicine on columns, from whence they were ſubſequently copied into books ; and that thoſe phyſicians who did not make them the rule of their conduct in the treatment of diſeaſes were puniſhed with death. In thoſe times

of

of ignorance, diſeaſes were looked on as proceeding immediately from the anger of the gods, who alone could cure them by the intervention of their prieſts, the deſpotiſm of whom confirmed the people in their antient uſages; and as the reign of thoſe interpreters of the heavens was hereditary, the principles of the art remained invariably the ſame: the ſons, following blindly the traces of their fathers, were far from being able to make any progreſs in the career of ſcience.

The ſtate of ſcience in India was nearly the ſame in the time of Alexander that it is at the preſent day. The Samaneans (Σαμαναῖοι) practiſed the art of medicine, which conſiſted chiefly in attention to diet; and in the employment of external remedies. In that country, a law exiſted which puniſhed with death any perſon who made known a new kind of poiſon, without at the ſame time pointing out an antidote to it. The Indians poſſeſs ſome very antient works, written in verſe, which treat of the art of curing diſeaſes, and which are not altogether deſtitute of merit. They found their prognoſtics on the appearances of the urine, much more than on anatomy, of which they are extremely ignorant. There are at preſent, on the coaſt of Coromandel, eight claſſes of phyſicians, who attach themſelves to the treatment of particular diſorders. Thus infants, pregnant women, perſons bitten by ſerpents, &c. have each their particular phyſicians. They conſider all eruptive diſeaſes as occaſioned by inſects. Their theory ſuppoſes that the human body is compoſed of a hundred thouſand parts, and that it is furniſhed with ſeventeen thouſand veins, and ſeven canals, through which blow ten different kinds of winds. Some of them reckon four thouſand four hundred and forty-eight ſpecies of diſeaſes occaſioned by humours, and by the winds which enter by means of reſpiration; and accordingly one part of their preſcription is, to reſtrain the reſpiratory actions.

In

In antient *Greece*, ſuperſtition exerted an equally ſtriking influence on medical practice. Anatomy was a ſcience ſcarcely known; the ſmalleſt inciſion of a dead body was regarded as a profanation, and as ſuch ſeverely puniſhed. A ſpeedy funeral was conſidered as a duty: hence took its riſe the inſtitution of feſtivals celebrated in order to appeaſe the manes of ſuch as had periſhed on the ſeas, or in a foreign land. In like manner, it was reckoned the firſt duty of a conqueror to burn the bodies of his enemies.

Rome, according to the relation of Pliny, was ſix hundred years without having any phyſicians that exerciſed their art in a regular manner. Reduced to pure empiriciſm, the Romans, from the time of the republic, had not yet been influenced by the ſpirit of ſyſtem which reigned in Greece, although their medicine reſted on maxims borrowed from this ſource. At length, however, they began to erect temples to Machaon, Apollo, and other deities, and ſurpaſſed even the Greeks in the ceremonies with which they encumbered their worſhip. In times of epidemic diſeaſes, they carried their gods into the ſtreets, where they were expoſed on beds of ſtate, and feaſts were celebrated in honour of them.

The augmentation of luxury at Rome ſoon contributed to multiply the number of their phyſicians; the greater part of whom were perſons who, after having been brought as ſlaves to that capital, had ſerved for ſome time in the public baths, whence they departed in order to open ſhops for the ſale of drugs. Theſe ſhops were known by the name of *Medicinæ*. Before this period, *Archagatus*, a Greek phyſician, had been encouraged by the Senate, who even beſtowed on him the right of citizenſhip; but, having performed ſome operations in ſurgery that ſeemed to them too cruel, he was thenceforth looked on in the light of an executioner, and denominated accordingly.

The medical knowledge of the *Chineſe* is cloſely allied to their aſtrological reveries, and is taught in the

the ſame ſchools. The court phyſicians have been, for the moſt part, perſons of mean condition, and commonly eunuchs. It would be waſte of time to dwell on the ridiculous ideas entertained by them, in regard to anatomy and phyſiology: yet they ſeem to have had ſome notion of the circulation of the blood before Harvey. They conſider the pulſe as a muſical inſtrument which indicates all the changes that take place in the body; and by divers methods, and, by ſtudying the pulſe in different parts of the body in ſucceſſion, they pretend to diſcover not only the ſeat of a diſeaſe, but likewiſe the variations it undergoes by the influence of the moon, and the change of ſeaſons. They have not often recourſe to blood-letting, but make frequent uſe of baths and of the moxa, which they apply on different parts of the body, in order to diſpel wind, which they conſider as the cauſe of moſt diſorders. They are acquainted with the practice of inoculation for the ſmall-pox, the virus of which they introduce by the noſtrils, keeping the patient cloſely ſhut up in a room hung with red tapeſtry.

Amongſt the *Celts* and other northern nations, the prieſts, under the name of Druids, exerciſed the functions both of legiſlators and phyſicians. Theſe Druids eſtabliſhed their myſteries and their credit in England, where they acquired vaſt power. Like the Samaneans, they engroſſed the practice of medicine. Their wives, called Alrannes, were looked upon as a ſort of female magicians or ſorcereſſes. They attributed great medical virtues to the oak, and eſpecially to the miſletoe, a plant which they gathered with numerous ceremonies. With them, as among the Greeks, ſerpents performed a diſtinguiſhed part in their oracles and ſoothſayings. They poſſeſſed, in the higheſt degree, like the prieſts of Eſculapius, the art of ſeizing the imagination of the people, and faſcinating their ſenſes by all ſorts of tricks.

It

It is to the Greeks that we owe the firſt attempts to give fixed principles and a ſcientific form to the healing art. Till the time of the fiftieth Olympiad, medicine had only been practiſed in the temples. At this period a claſs of phyſicians began to be formed, by little and little, and who were called *Periodeutes*, from the manner in which they practiſed, going about to viſit the ſick in different places. An inſurrection of certain phyſicians of the ſchool of Croton againſt the ſect of the Pythagoreans was the original cauſe of this. Metrodorus, of Cos, one of the Laics who had been initiated in the myſteries of Eſculapius, laid open in his practice the precepts which he had ſworn not to divulge. Other phyſicians of the ſame ſchool, and of that of Cyrene, acquired alſo diſtinguiſhed reputation by the ſame conduct, to the great detriment of the followers of Aſclepiades. Theſe laſt ſoon found themſelves under the neceſſity of rendering their practice popular, and began by publiſhing it in ſentences, according to the facts which they found cited on the votive tablets; and, as they had not yet an idea of the cauſes of diſeaſe, they took notice only of the ſymptoms, for each of which they had a remedy.

Hippocratic medicine. The author traces the genealogy of this Father of real Medicine with minuteneſs. There were, he obſerves, ſeveral phyſicians of this name. Hippocrates, of whom mention is here made, was the eleventh, and the moſt diſtinguiſhed by his talents and learning, although, in reality, his doctrines took their firſt riſe among his predeceſſors. We owe to Soranus the little knowledge we poſſeſs of the circumſtances of his life. His family was of the race of the Aſclepiades'; his father's name was Heraclides, and his mother's Phenarete. His inſtructors were, firſt, his father, and afterwards Herodicus, of Selymbria, and Gorgias, of Leontium. He lived for ſome time at the court of Alexander, King of Macedon, and rendered himſelf famous by the cure of his ſon Perdiccas of a kind of melancholy occaſioned by his love of his mother-

mother-in-law Phila. He refuſed the offer made him by Artaxerxes, King of Perſia, to be his phyſician; preferring to render himſelf uſeful to his countrymen, rather than to go and practiſe his art among ſtrangers. He paſſed the latter part of his life at Lariſſa, where he died, and near which city a monument was erected to his memory.

Hippocrates left behind him various works on medicine, which he wrote on tablets of wax, or on the prepared ſkins of animals. His ſons Theſſalus and Draco, as well as his ſon-in-law Polybius, corrupted his writings by the introduction of new maxims. Thence reſulted an uncertainty with reſpect to the works of which he was really the author; and the confuſion in this point was carried to the greateſt length under the Ptolemys, who, having conceived the deſign of forming libraries, graſped at every thing for the purpoſe of enriching them. Thence it happened, that intereſted perſons, profiting by their deſire of poſſeſſing the works of this great man, ſold, as his, ſuch as he had no hand in. In this way they were poured in on all ſides. But, by little and little, they learnt to diſtinguiſh the true writings of Hippocrates from thoſe which were fictitious. Capiton, and Dioſcorides, his relation, who lived in the reign of the Emperor Adrian, are known to have thrown the greateſt light on the ſubject. Galen had acquired ſuch ſagacity in this reſpect, that he was able to diſtinguiſh at firſt view the real writings of the Father of Medicine.

The peculiar doctrines of Hippocrates are too well known to require particular notice here. It is ſufficient to obſerve, that there is ſcarcely a part of the practice of the art of medicine which he has not more or leſs enriched with his obſervations. His ſimple but grand manner of contemplating things, is the only juſt mode of obſervation; and the maxims he eſtabliſhed have never ſince been wholly abandoned by phyſicians, notwithſtanding the multitude of oppoſite ſyſtems

ſyſtems which have appeared from his time to the preſent moment.

The author next traces the hiſtory of medicine from Hippocrates to the eſtabliſhment of the methodic ſect, and the changes which took place in its doctrines, according to the prevailing philoſophy of the times.

The expedition of Alexander the Great was a ſource of new light to ſcience. That Prince employed, it is ſaid, ſome thouſands of perſons to tranſport to Macedon, from the remoteſt regions, every object of curioſity in natural hiſtory, in order to preſent them to his tutor Ariſtotle; on whom he likewiſe beſtowed an extenſive territory, and eight hundred talents to enable him to proſecute his labours. This philoſopher was the firſt who entertained any preciſe notions with regard to the nerves, arteries, veins, and heart. His knowledge of the ſtructure of animals enabled him to point out the exact difference between man and the monkey tribe. His labours in zoology are well known; but his works in botany have not come down to us.

Alexandrian ſchool. Ptolemy Soter, the ſucceſſor of Alexander in Egypt, was a lover of the ſciences, and a promoter of every thing which tended to their improvement. At this period it was, that permiſſion was firſt given to phyſicians to ſtudy anatomy on the human body. Philadelphus, he who, of all the Ptolemys, diſtinguiſhed himſelf moſt by his zeal in this reſpect, ſent out hunters in all directions to bring back animals that might contribute to the progreſs of ſcience. Alexandria became then the centre of knowledge and erudition. He formed a vaſt library in the Temple of Serapis, and laboured ſo greatly to enrich it, that in no long time the number of volumes it contained, amounted, it is ſaid, to ſeven hundred thouſand. He eſtabliſhed alſo a muſæum, called *Bruchnion*, where profeſſors reſided, endowed with penſions from the

the ftate, and who, for their inftruction and the purpofes of their labours, had the free ufe of the library and cabinet of natural hiftory. Alexandria poffeffed within it, alfo, focieties of learned men, where they difputed on the fubjects of natural philofophy and the other fciences, and where prizes were decreed to the victors, as at the Olympic games. To have lived at Alexandria was a certain means of a phyfician's acquiring celebrity in other places.

The *Empiric fchool*, firft eftablifhed by Philinus, of Cos, a pupil of Herophilus, next engages the author's attention: but our limits forbid us, at prefent, to proceed further. A chronological table of great extent terminates the firft volume of M. *Sprengel*'s hiftory.

ART. XLVII. *Defcription and Treatment of Cutaneous Difeafes. Order II. Scaly Difeafes of the Skin. By* ROBERT WILLAN, *M. D. F. A. S.* 4to. 212 pages, price 1*l* 4*s*. London, 1801. JOHNSON.

PRACTITIONERS will greet with welcome the continuation of the author's labours on this important and interefting fubject. The firft order, we have feen, contained the papulæ, which were defined, 'a very fmall and acuminated elevation of the cuticle, with an inflamed bafe, not containing a fluid; not tending to fuppuration: terminating for the moft part in fcurf.' This order confifted of three genera: *Strophulus, Lichen*, and *Prurigo*: of each of thefe, with their *fpecies* and *varieties*, we gave a fufficiently ample account.

The fecond order of cutaneous difeafes, now to be noticed, includes thofe affections which are characterized by an appearance of fcales, arifing from a morbid ftate of the cuticle. The cuticle is not, however, the author obferves, the only feat of thefe complaints: their real origin feems often to be indurated papulæ, or larger

larger elevations of the true ſkin, which, by preſſure or diſtention, injure the texture of the cuticle, and produce thickened irregular layers of it. The ſcales or cruſts thus formed have not always been diſtinguiſhed from ſcabs ſucceeding confluent puſtules, or ſuperficial ulcerations; whence we find, in medical writers, ſeveral diſſimilar diſeaſes improperly connected together.

The generic diſeaſes of the preſent order are, *Lepra, Pſoriaſis, Pityriaſis,* and *Icthyoſis.*

By the term *Lepra,* the author means to expreſs the complaint ſo denominated by the moſt accurate of the Greek phyſicians, It is characterized by ſcaly patches of different ſizes, but having always a nearly circular form. In this country, the author remarks, he has obſerved three varieties of the diſeaſe, under the titles of *Lepra vulgaris, Alphos,* and *Nigricans.* The chief difference in theſe caſes ſeems to conſiſt in the colour of the ſcabs or patches.

The lepra and elephantiaſis have been frequently confounded together by writers; they differ, however, the author remarks, in the former being deſtitute of the following ſymptoms which characterize the elephantiaſis; viz. baldneſs of the head; deſtruction of the ſmall hairs of the ſkin; deep ulcerations; fetid ſweats; and loſs of ſenſation in the parts affected. The lepra is not, in the opinion of the author, either contagious or hereditary. The occaſional circumſtances which contribute to its production have not been fully aſcertained. Particular kinds of diet, as dried meats, fiſh, oatmeal, and ſome incongruous mixture of food, are uſually aſſigned as cauſes, but not on ſufficient authority. The only occaſional cauſes that can be pointed out with any certainty are, expoſure to cold and moiſture, and the accumulation of ſordes on the ſkin. Hence frequent waſhing and bathing conſtitute, in mild caſes, the moſt eſſential part of the treatment.

 Reſpecting

Respecting the remedies ordinarily employed in these cases, Dr. Willan remarks, 1st, that antimonials, sulphur, and nitre, have not alone any considerable efficacy. 2. That decoctions of emollient herbs, of guaiacum wood, sarsaparilla, mezereon, or of elm-bark, which have been recommended as specifics, by no means deserve that character. 3. That calomel, hydrargyrus calcinatus, pilulæ hydrargyri, or mercurial frictions applied so as to produce salivation, do not remove the disease. The only preparation of this mineral which makes any impression on the lepra, is the sublimate or hydrargyrus muriatus; and the operation of this is promoted by giving at the same time an antimonial, and some of the decoctions above-mentioned. 4. That the nitrous and marine acids lately recommended in obstinate cutaneous eruptions, have been given in the lepra during three or four successive months, without any manifest advantage. The author observes, however, that he has often experienced the most beneficial effects in this disease from a medicine of an opposite quality, the caustic alkali, thirty drops of the aqua kali puri being given thrice a day, in a cupful of any mild liquid. —Several judicious practical remarks occur afterwards on various other remedies which have been employed in this disease; but for these we must refer to the work itself.

The second genus of this order is *Psoriasis*; dry or scaly tetter. It is characterized by a rough and scaly state of the cuticle, sometimes continuous, sometimes in separate patches of various sizes, but of an irregular figure, and for the most part accompanied with rhagades or fissures in the skin. From the lepra it may be distinguished not only by the different form and distribution of the patches, but also by its cessation and recurrence at certain seasons of the year, and by the disorder of the constitution with which it is usually attended. Like most other cutaneous diseases, it has been described under various appellations, and by some has

has been called pfora or fcabies ficca, by others impetigo.

Different varieties of this difeafe have been obferved, and the author has particularly diftinguifhed the following: *Pforiafis guttata, diffufa, gyrata, palmaria, labialis, infantilis*, and *inveterata*.

In the treatment of thefe difeafes, the author obferves, bleeding and purgatives do little fervice. Chalybeate waters, and particularly the fulphureous, are among the beft remedies. Strong mercurial preparations are of no advantage. The free ufe of antimonials, of the warm bath, with repeated friction, and the mineral waters above-mentioned, are the remedies chiefly to be relied on.

The third genus is the *Pityriafis*. This confifts of irregular patches of fmall, thin fcales, which repeatedly form, and feparate; but never collect into crufts, nor are attended with rednefs, or inflammation, as in the lepra and fcaly tetter. Two varieties are here noticed, under the denominations of *pityriafis capitis* and *verficolor*.

The pityriafis capitis, when it affects very young infants, is termed by nurfes the dandriff. It appears, at the upper edge of the forehead and temples, as a flight whitifh fcurf fet in the form of a horfefhoe: on other parts of the head there are large fcales, at a diftance from each other, flat, and femipellucid. Sometimes, however, they nearly cover the whole of the hairy fcalp, being clofe together, and imbricated. A fimilar appearance may take place in adults, but it is ufually the effect of lepra, fcaly tetter, or fome general difeafe of the fkin. Elderly perfons have the pityriafis capitis in nearly the fame form as infants: the only difference is, that this complaint in old people occafions larger exfoliations of the cuticle.

When the hair is thin, or the head fhaven, the author obferves, the fcales may with a little attention be

 removed

removed by the uſe of ſoap and warm water, or by a ſlight alkaline lotion.

'The *pityriaſis verſicolor* chiefly affects the arms, breaſt, and abdomen, in irregular patches, which are at firſt ſmall, and of a brown or yellow hue. All the diſcoloured parts are ſlightly rough with minute ſcales, which ſoon fall off, but are conſtantly replaced with others. There is no elevated border or diſtinguiſhing boundary between the diſcoloured part of the ſkin and that which retains its natural colour. Reſpecting the cauſes and treatment of this variety of pityriaſis, nothing ſatisfactory is offered.

The laſt genus of the ORDER of Scaly Diſeaſes is the *Icthyoſis,* ſo called from the reſemblance it bears to the ſcales on the ſkin of a fiſh. The characteriſtic of icthyoſis is a permanently harſh, dry, ſcaly, and, in ſome caſes, almoſt horny texture of the integuments of the body, unconnected with internal diſorder. Pſoriaſis and lepra, the author obſerves, differ from this affection, in being but partially diffuſed, and in having deciduous ſcales.

'The arrangement and diſtribution of the ſcales in icthyoſis are peculiar. Above and below the olecranon on the arm, and in a ſimilar ſituation with reſpect to the patella, on the thigh and leg, they are ſmall, rounded, prominent or papillary, and of a black colour. Some of the ſcaly papillæ have a ſhort, narrow neck, and broad, irregular tops. On ſome parts of the extremities, and on the trunk of the body, the ſcales are flat, and large, often placed like tiling, or in the ſame order as ſcales on the back of a fiſh; but in a few caſes they have appeared ſeparate, being interſected by whitiſh furrows. There is uſually in this complaint a dryneſs and roughneſs of the ſoles of the feet; ſometimes a thickened and brittle ſtate of the ſkin in the palms of the hands, with large painful fiſſures, and on the face an appearance of ſcurf rather than of ſcales. The inner part of the wriſts, the hams, the

the infide of the elbow, the furrow along the fpine, the inner and upper part of the thighs, are perhaps the only portions of the fkin always exempt from the fcalinefs. Patients affected with icthyofis are occafionally much haraffed with inflamed puftules (Phlyzacia, Def. 10. 1.), or with large painful boils on different parts of the body: it is alfo remarkable, that they never feem to have the leaft perfpiration or moifture of the fkin.

'This difeafe did not, in any cafe prefented to me, appear to have been tranfmitted hereditarily; nor was more than one child from the fame parents affected with it. In feveral inftances the difeafe was faid to have been connate, and in others to have occurred two or three months after birth; in one cafe it appeared foon after the fmall-pox, at the age of two years, and had continued fix or feven years without alteration.

'When a portion of the hard fcaly coating is removed, it is not foon produced again. The eafieft mode of removing the fcales is to pick them off carefully with the nails, from any part of the body, while it is immerfed in hot water. The layer of cuticle which remains after this operation is harfh and dry; and the fkin did not, in the cafes I have feen, recover its ufual texture and foftnefs; but the fcales were prevented from forming afterwards by the repeated ufe of the warm bath, along with moderate friction.'

The following cafe, which has fome analogy with the Icthyofis, is extracted from the *Philofophical Tranfactions*, No. 176, and is worth tranfcribing, on account of its fingularity. It is communicated in a letter from a gentleman of the Dublin Society to the Secretary of the Royal Society.

"The account I here fend of the horny girl is much more imperfect than I hoped it would have been, both becaufe its parents or friends, who might give fome information of the beginning and occafion of the growing

out of these horns, are not to be found; and that the owner of this monster could not be persuaded to let us take the figure thereof, which we designed to present you. She is called Ann Jackson, born in the City of Waterford, of English parents, who are both said to have been sound and healthy: this infirmity did not shew itself till she was about three years old, after which the mother concealed her out of shame, and brought her up privately: but she soon dying, and the father becoming exceedingly poor, the child was left a charge upon the parish. She is now between thirteen and fourteen years of age, yet can scarce go; and is so little in stature, that I have seen children five years old taller. She is very silly, speaks little, and that not plainly, but hastily, and with difficulty: her voice is low and rough: her complexion and face well enough, except her eyes, which look very dead, and seem to have a film or horn growing over them, so that she can hardly now perceive the difference of colours.

"The horns abound chiefly about the joints and flexures, and not on the brawny fleshy part of her body: they are fastened to the skin like warts, and about the roots resemble them very much in substance, though towards the extremities they grow much harder, and more horney. At the end of each finger and toe, grows one as long as the finger or toe; not straight forwards, but rising a little between the nail and the flesh (for near the roots of these excrescences is something like a nail); and bending again like a turkey's claw, which, too, it much resembles in colour. On the other joints of her fingers and toes are smaller ones, which sometimes fall off, others growing in their places. The whole skin of her feet, legs, and arms, is very hard and callous, and does daily grow more and more so. On her knees and elbows, and round about the joints, are many horns; two more remarkable at the point of each elbow, which twist like rams' horns: that on the left arm is above half an inch broad, and four inches long. On her buttocks grow a great number, which are flat

by

by frequent ſitting: at her armpits, and nipples of her breaſts, ſmall hard ſubſtances ſhoot out much ſlenderer and whiter than the reſt: at each ear alſo grows a horn. The ſkin of her neck does of late begin to turn callous and horny like that of her hands and feet. She eats and drinks heartily, ſleeps ſoundly, and performs all the offices of nature like other healthy people, except that ſhe never had the evacuation proper to her ſex. This, Sir, is as particular an account as I can gather.

"I am, &c."

Art. XLVIII. *Experiments and Obſervations on the Medicinal Waters of Hampſtead and Kilburn. By* John Bliss, *Member of the Royal College of Surgeons in London.* 8vo. 58 pages, price 2*s.* London, 1801. Phillips.

THE mineral water of Hampſtead was formerly held in conſiderable eſtimation for its medical virtues, and the ſpot much reſorted to, both on the ſcore of pleaſure and health. It has, however, in its turn, been ſubject to the caprice of faſhion, and has given place to other ſprings, of virtues, probably, in no reſpect ſuperior. The Hampſtead water appears to be a ſimple carbonated chalybeate water, not greatly differing, either in quality or degree of impregnation, from the waters of Tunbridge, and many other places in this country. Its utility in diſeaſes, too, reſts on a ſimilar foundation.

The *Kilburn* well affords a water of a different deſcription, and which is of the ſimple ſaline tribe, a pint of it yielding about a drachm and four grains of purgative ſalts; viz. the ſulphates of ſoda, magneſia, and lime, with ſmaller portions of the muriates of the ſame baſes. It contains, likewiſe, a ſmall portion of iron, but too minute to give it the character of a chalybeate

 water,

water. The medical properties of this may eaſily be inferred from the contents above-mentioned.

The analyſis of the waters here given appears to have been conducted with conſiderable caution, and the experiments to have been ſufficiently varied; their accuracy, therefore, we ſuppoſe, may be relied on. It is probable, however, that ſome of the compounds ſtated in the general reſults were the effect of new combinations formed during the different proceſſes employed in the analyſis.

Art. XLIX. *Obſervations on the Cow-pox. By* John Coakley Lettsom. *M. et L.L.D. &c.* 4to. 88 pages, price 3*s*. London, 1801. Nicholls.

THE object of the reſpectable author of the pamphlet before us is, by oppoſing the prejudices which ſtill ſubſiſt with regard to the vaccine inoculation, to facilitate its introduction into general uſe. This he endeavours to accompliſh by giving an hiſtorical account of the firſt diſcovery and introduction of the cow-pox inoculation; a deſcription of the diſeaſe; and a concentrated view of the arguments and facts by which the value of the diſcovery has been ſupported. Although little novelty is to be expected, or indeed is held forth, in the preſent treatiſe, a forcible appeal is made to the judgment as well as the feelings of the public; the efficacy of which, when the rank and influence of the author are conſidered, cannot fail to be conſiderable. Due praiſe is beſtowed on the favourers and promoters of the new practice, and particularly on the diſcoverer, Dr. *Jenner.* The frequent occaſion we have had to notice the ſubject, precludes the neceſſity of being more particular here.

Art.

Art. L. *Medical Cases and Remarks:* Part I. *On the good Effects of Salivation in Jaundice arising from Calculi.* Part. II. *On the free Use of Nitre in Hæmorrhagy. By* Thomas Gibbons, *M.D.* Second edition, with additions. 8vo. 123 pages, price 3*s.* London, 1801. Callow.

OF the first edition of this small work we gave an account in a former volume of our Review;* to this, therefore, we refer for particulars. Of the present it is sufficient to observe, that it contains additional proofs of the utility of the practice there recommended.

Art. LI. *A Treatise on the Cow-pox; containing the History of Vaccine Inoculation; and an Account of the various Publications which have appeared on that Subject, in Great Britain, and other Parts of the World. By* John Ring, *Member of the Royal College of Surgeons in London.* Part I. 8vo. 496 pages, price 8*s.* London, 1801. Carpenter, &c.

THE intention of the author in compiling the present Treatise, as observed in the preface, was 'to collect and combine the substance of all that has hitherto been ascertained on this interesting subject; and rather to incur the charge of prolixity, than to deserve the censure of omitting any thing of importance, on an occasion where the welfare and happiness of the whole human race are concerned.'

It is added—'In some measure to supply the want of systematic order, a copious index will be subjoined to the second part. Two plates will accompany that part; which will unavoidably cause an addition to the price. The difficulty in procuring accurate represen-

* Vol. 6, page 383.

tations

tations of the vaccine pustules has delayed the publication of this work; and, it is hoped, the reason, when understood, will plead a sufficient apology for the delay. It was the author's wish to have given one plate with each volume; but he was unwilling longer to defer what, he sincerely hopes, may prove useful.'

It will not be expected that we should enter minutely into the consideration of a work that is itself so strictly analytical. To such as are unacquainted with the practice of vaccination it will afford a minute and accurate account of a very interesting subject; and even those who have already made it an object of their attention, will here be gratified with a critical, and, we believe, impartial, review of nearly all that has been written with regard to it.

Art. LII. *Observations on the Opinion of Dr. Langslow, that Extravasation is the general Cause of Apoplexy; in Letters to a young Surgeon. By* William Crowfoot. 8vo. 46 pages, price . London, 1801. Robinsons.

THE occasion of this pamphlet was one of those professional feuds, which, at the same time that they do no credit to the parties themselves, reflect disgrace on the profession in general.

It seems the author was called to a case of apoplexy occurring in a lady fifty-nine years of age, immediately after dinner. Six ounces of blood were taken from the patient, and a blister applied to each arm. The insensibility lasted half an hour after the bleeding, and the whole duration of the fit was more than an hour and a half. At the end of this period she could speak, and appeared sensible. The pulse was rather quick, but regular, and she complained of sickness and headache. An emetic was now proposed, but objected to by

by the confulting phyfician, ‘ who afferted, in the moft pofitive language, that there was then a confiderable extravafation of blood upon the brain, and that the ficknefs was the effect of compreffion, &c. &c.: he declared that an emetic, which he underftood was in contemplation to be given, was a moft injudicious remedy; that vomiting caufed a very great determination of blood to the head, and would but increafe the complaint; that the ficknefs was merely fymptomatic, the fame as in injuries of the head, wherein vomitings always fupervened, &c.’

Such was the circumftance which gave rife to the pamphlet before us. The object of the author is to inquire into the opinion, pretty generally obtaining, that apoplexy is owing to effufion of fome kind on the brain. With the merely perfonal part of the controverfy we have nothing to do. Whether Dr. *Langflow* was correct in afferting, ‘ that in every cafe of real apoplexy which poffibly can occur the caufe is either extravafation, exudation, or effufion;’—or the author in fuppofing, ‘ that, if the ftomach be not the primary feat of the diforder, the ftate of that organ muft be confidered as making a very effential part in numerous inftances of apoplexy,’—is of little moment to the public, as far as the parties themfelves are concerned. The truth is, the immediate caufe of apoplectic fymptoms, in other words, the exact condition of the nervous fyftem in thefe cafes, is ftill hidden from us. Preffure on the brain has been found in fuch a great number of inftances of the difeafe, that it is difficult not to confider this as the general exciting caufe: yet there are not wanting cafes where no trace of effufion or extravafation could be difcovered on diffection; and if preffure in thefe be, as in other cafes, the exciting caufe, it muft be referred to an increafe of action in the living veffels occafioning a degree of diftention that may be no longer perceptible after death.

The author is probably right in condemning the indifcriminate ufe of blood-letting in fuch cafes, and

in recommending that of emetics, which have, no doubt, often been adminiſtered with advantage. The proper employment of blood-letting cannot, perhaps, be better regulated, than by attending to the rule laid down by Dr. *Heberden* on this point, and here quoted, viz. "that wherever the ſtate of the health was ſuch, that there would have been juſt objections to taking away blood before the attack of apoplexy or palſy, there will always be a good reaſon, if not againſt bleeding at all, yet, certainly, againſt taking much blood after ſuch an attack; and accordingly ſome apoplectic patients have appeared to be much hurt by large and repeated bleeding."*

ART. LIII. *The Principles of Surgery, in Two Volumes: Vol. I. of the ordinary Duties of the Surgeon, containing the Principles of Surgery, as they relate to Wounds, Ulcers, and Fiſtulas; Aneuriſms, and wounded Arteries, Fractures of the Limbs; and the Duties of the Military and Hoſpital Surgeons. Vol. II. A Syſtem of Surgical Operations, containing the Principles of Surgery, as they relate to Surgical Diſeaſes and Operations, as Lithotomy, Trepan, Hernia, Hydrocele, Amputation, &c. By* JOHN BELL, *Surgeon..* 4to. vol. I. containing 674 pages, price, Four Guineas!! Edinburgh, 1801. CREECH and Co.

IF a proof were wanting of the utility, and even neceſſity, of compendious periodical journals, a better could not be offered than the bulky and coſtly volume before us. It ſeems that the price of literature, like that of all other articles of daily uſe, is enhanced beyond all reaſonable bounds. The far greater part of literary works are rendered inacceſſible to men of moderate revenues by an expenſive ſtyle of printing, and the extravagance of the bookſeller's charges. Bookſellers

* Med. Tranſ. Vol. 1, page 471.

and

and printers, indeed, may, for a time, profit by ſuch impoſitions on the public; but we are very ſure that neither ſcience, nor its cultivators, can be ultimately benefited thereby. Theſe remarks apply with peculiar force to the volume before us (for it is the firſt volume only that has yet appeared at 4*l* 4*s*). Its ſize and price are both extravagantly and unneceſſarily great. Many an uſeleſs diſcuſſion, and many an idle tale, might have been withheld, and the value of the work enchanced by the retrenchment. Of what importance to the ſtudent is it, that the *Taliacotian* doctrines of adheſion, and the ſympathetic cures of Sir *Kenelm Digby* and his followers, be made to fill a number of pages?—or that the abſurd and antiquated practices of the older ſurgeons be called into light?

We are not inſenſible, however, to the real value of Mr. John Bell's labours; we regret only it is not more within the reach of medical ſtudents to profit by them. His bold and impreſſive manner, we obſerved on a former occaſion, is exceedingly well calculated to fix the pupil's attention to the moſt intereſting and important points of his duty.

As the work really admits of abridgment, we ſhall, in the preſent and two or three ſucceeding numbers of our Review, endeavour to bring the reader acquainted with the leading features of it, dwelling eſpecially on ſuch parts as are recommended by their novelty or importance in practice.

The preſent volume is divided into three ſections, the firſt treating of wounds, ulcers, and the ordinary duties of the hoſpital ſurgeon. The author inſiſts with much propriety on an attention to the minuter duties of the ſurgeon, a thing, as he obſerves, too much neglected in modern practice. Operations, he remarks, uſurp an importance in ſurgical education which they ſhould not naturally have. They have come at laſt to repreſent, as it were, the whole ſcience; and a ſurgeon, far from being valued according to his ſenſe, abilities,

and

and general knowledge, is eſteemed excellent only in proportion as he operates with ſkill.

The importance of accurate anatomical knowledge to the ſurgeon is pointed out with peculiar force. The example and ſucceſs of the moſt eminent of the profeſſion are ſufficient incitements to the purſuit. ‘ It was by their knowledge of anatomy,’ the author remarks, ‘ that Paré, Dionis, Heiſter, Wiſeman, Le Dran, were diſtinguiſhed among hundreds of other ſurgeons in the camp ; this was, in their own opinion, the point from which their profeſſional excellency and public character aroſe ; a character founded not on the patronage of the great, nor on high appointments, but on ſevere previous ſtudy. And be it your comfort to know, that they were juſt as you are : it was their own intenſe diligence, and, above all, their acquaintance with anatomy, the very baſis of our ſcience, which made them the firſt ſurgeons in the chief cities of Holland, England, and France ; the beſt authors in their own days, and the higheſt authorities in our's. Anatomy has always been acknowledged as the baſis of all medical education. In thoſe days when ſurgery had not any reſpectable rank in general ſcience, the phyſicians, who were anatomiſts, taught the ſurgeons. The ſurgeons were but their ſervants, aſſiſtants, and operators. When the ſurgeons began to learn anatomy, their part of the profeſſion began to improve ; for it was then only that anatomy and ſurgery, the theory and practice, were rightly combined. In the early days of ſurgery every book was regularly prefaced with a ſyſtem of the anatomy of the human body ; and if this preludium be omitted now, it is becauſe anatomy is become, in itſelf, an important ſtudy. It is not by ſketches and ſlight views that a ſurgeon can become truly accompliſhed in it. Every one is preſumed to be thoroughly informed in that ſtudy, which contains the elements of ſurgery, and of all medical ſcience. Anatomy, I repeat it, is indeed the baſis of medical education, the only one which will be ac-

knowledged

knowledged by any fenfible and well-informed man. Chemiftry, phyfiology, pathology, all look back to the ftructure and functions of the human body, and twine themfelves round this great trunk.'

Having treated at confiderable length of the education and duties of a furgeon, the author, in his fecond difcourfe, fpeaks of the doctrine of adhefion. The practice of healing wounds by a union of divided parts is entirely of modern date. By their rude treatment, the older furgeons abfolutely delayed the cure. They never allowed the lips of a wound to fall together; they crammed it with dreffings and acrid balfams, or diftended it with tents and leaden tubes. They were ingenious in every invention to prevent its fudden healing. The practice of adhefion, which was deftined to improve furgery more than any other, was at firft a profeffion only among quacks; nor did they even dare to declare an intention of immediately reuniting wounds in direct oppofition to the canons of furgery.

This property in living parts, the author obferves, of inofculating and uniting again, is fo perfect, that we may depend on it with abfolute confidence. In wounds and operations there are but two great points to be attended to; firft, the fecuring the arteries, fo that the patient may be in no danger from bleeding; and then the procuring a fpeedy adhefion, by which the pain, fuppuration, wafte of fubftance, and all the other bad confequences of the wound, are prevented. Upon this principle we are able to perform things in the regular way of furgery as furprifing as thofe which paffed for miracles in the times when the fympathetic cures were in vogue. In many operations, we contrive, by faving the fkin, to cure, in ten days, a furface which, if cut according to the forms of the old furgery, and cured according to the old rule of digefting and incarning the wound, muft have taken at leaft fix months. A confiderable fhare of the merit due to this doctrine of adhefion, and its application, is with juf-

tice

tice attributed to the late Mr. John Hunter. The different modes of procuring adhesion are then pointed out with much clearness, and the different sutures described.

This principle of adhesion, Mr. Bell remarks, pervades all surgery. There is no wound in which we may not try, with safety, to procure it. It is to be kept in view, both in simple and in complicated wounds, where there are wounded arteries and broken bones; not in the first moment only, but throughout the whole cure. Though it do not always succeed, as must be the case, no harm is done by the attempt: still the wound will suppurate as kindly, as freely, as if it had been roughly dressed with dry lint, or some vulnerary balsam or acrid ointment.

Discourse 3 treats of ill-conditioned and complicated wounds; of ulcers, dressings, bandages, and the daily duties of the surgeon. The cause of wounds degenerating into ill-conditioned sores, the attention in the surgeon necessary to avoid this, the use and abuse of poultices, bandages, and other applications, are all here properly insisted on. A most interesting account is given of the *hospital sore*, which the author considers as a general affection of the system—a mortal and contagious disease; for when it rages in a great hospital, it is like a plague; few who are seized with it escape. 'There is no hospital, however small, airy, or well regulated, where this epidemic ulcer is not to be found at times; and then no operation dare be performed! Every cure stands still! every wound becomes a sore, and every sore is apt to run into gangrene; but in great hospitals especially it prevails at all times, and is a real gangrene: it has been named the *Hospital Gangrene*; and such were its ravages in the Hotel Dieu of Paris (that great storehouse of corruption and disease), that the surgeons did not dare to call it by its true name; they called it the rottenness, foulness, sloughing of the sore! The word hospital gangrene they durst not pronounce,

pronounce, for it ſounded like a death-bell*; at the hearing of that ominous word the patients gave themſelves up for loſt. In the Hotel Dieu this gangrene raged without intermiſſion for two hundred years, till of late, under the new government of France, the Hoſpital has been reformed. "A young ſurgeon," ſays an ancient French author, "who is bred in the "Hotel Dieu may learn the various forms of inci-"ſions, operations too, and the manner of dreſſing "wounds; but the way of curing wounds he cannot "learn. Every patient he takes in hand (do what he "will) muſt die of gangrene." Nothing, perhaps, will contribute ſo much to your underſtanding this diſeaſe, as a plain deſcription of it in the form of an individual caſe.

'*Joiner*, a boy belonging to the *Triumph*, whoſe ulcer I have drawn, received but a very ſlight and ſuperficial wound, and for ſome time after the battle he continued in health, and the wound healed rapidly. But while it was to all appearance florid and healthy, with no threatening of ulceration, the boy in full ſpirits and ſtrength, walking about on crutches, guilty of no irregularity, it began to look ill; a ſure preſage of ſome change of health.

'There came on a cough, with ſymptoms of common cold, which he imputed to being placed near a door, lately open, and now ſhut, but not walled up; then his health failed, his ſpirits became quite oppreſſed: he had occaſional attacks of fever, frequent vomiting, and a continual loathing of food. With theſe ſlight and ſeemingly unimportant ſymptoms (but the tendency of ſuch ſymptoms when they appear in a foul hoſpital is eaſily underſtood), his ſore, which was no bigger

* La Motte ſays—"Mortification ce qu'on appelle Pouriteur a l'Hotel Dieu de Paris, la quelle ſurvient et accompagne preſque toutes les playes qui ſont traité dans cette hoſpital," p. 330. And the diſeaſe was not named "dans le crainte d'inquieter ces bleſſez qui croiroient etre perdue des que l'on appel eroit cet pourriture, Gangrene."

 than

than the palm of the hand, became in two days as big as the crown of a hat; in one week it grew as large as repreſented in the drawing. The whole ſkin of the thigh was deſtroyed, the muſcles were ſtripped of ſkin and faſcia from the hip to the knee, the trochanter was almoſt laid bare, the hamſtring muſcles expoſed to a conſiderable extent, and all the muſcles of the thigh diſſected in a manner which no drawing can expreſs.'

'Drunkenneſs and debauchery, ſtomach complaints, vomiting, diarrhœa, low ſpirits, the return of an old intermittent fever, the infection of dyſentery, any debilitating cauſe, will produce a change in the appearance of a wound. But this infection of the hoſpital is the moſt irreſiſtible of all. The moment that a man is ſtruck with it, you may obſerve him become pale, ſallow, languid, low-ſpirited, with a heavy eye, a confuſed head, a loathing of food, a fretful pulſe, and, in ſhort, a univerſal diſorder, which he can neither account for nor deſcribe; and whether this diſeaſe appear firſt in the ſyſtem, or in the part wounded, its progreſs is the ſame. When I have obſerved in any caſe the ſore to be firſt affected, I have noted it as a ſure ſymptom of the approaching diſorder of the whole ſyſtem; or when the ſyſtem was firſt affected, I have marked that as a ſure preſage of the ſad change which was ſoon to appear in the ſore. He muſt, indeed, be very ignorant who diſputes this hoſpital ſore's being a general diſeaſe of the ſyſtem; he muſt have obſerved very little, who does not know it to be abſolutely an infection. To what other cauſe can it be aſcribed? To a ſcorbutic and bad habit of body? Surely not; for the boys of the ſhip, who run about continually, and from their ſpirits and exerciſe are always in health, are the firſt affected with hoſpital ſore: but thoſe chiefly ſubject to the ſcurvy are the landſmen, who are unhappy in a ſea life; impreſſed men, who have been torn from their friends; or lazy ſkulkers, who never move but to the ſound of the boatſwain's whiſtle. Neither can we attribute it to the unhealthy ſtate of the crew of a particular ſhip;

for

for the wounded of ſuch ſhip are unavoidably diſperſed: ſome are at ſick quarters, and they get well; ſome are carried into the hoſpital, and they become diſeaſed; and ſometimes when thoſe hoſpital patients are carried out again to ſick quarters, they recover their former health. Thus we ſee this diſeaſe confined within the walls of an hoſpital; nor does it always extend further than a ſingle ward. In Yarmouth, the Engliſh ſeamen who were wounded on the 11th October were divided from three hundred wounded men of the Dutch by a wall only; the great wards were on the oppoſite ſides of the partition under one roof; on the one ſide of that partition we operated on men and boys, opened ſinuſes, or ſearched for balls or pieces of ſhot, as freely as in the moſt healthy hoſpital, or in ſick quarters: not a ſore was to be ſeen there, except ſuch as were the inevitable conſequence of gunſhot-wounds, with carious bones. But on the other ſide of the partition-wall were ſuch ſores as are ſeldom ſeen, prohibiting all operations even the moſt trivial.

'Indeed, from all that I ever could obſerve, the vulgar expreſſion of the tainted air of an hoſpital is not incorrect. This ulcer and gangrene is, in an hoſpital of wounded men, what puerperal fever is in a lying-in ward; it is an infection to which all are equally expoſed; but it is reſiſted by health and ſtrength, and favoured by weakneſs or diſeaſe. Exceſſes, drunkenneſs, cold, and every cauſe of weakneſs, expoſes the conſtitution to its attack. If diarrhœa, fever, dyſentery, or an old intermittent, or even a common cold, attack a wounded man who lies in an unhealthy hoſpital, the firſt febrile ſymptoms are immediately followed by this terrible diſeaſe. Though we often miſtake theſe debilitating powers for principals, I ſuſpect that they are but prediſpoſing cauſes, and that the diſeaſe of the hoſpital, like a peculiar typhus, or the ulcerated ſore throat, is ſtill the ſame. What, then, is the ſurgeon to do? Is he to try experiments with ointments and plaſters while men are dying around him? Is he to

seek for washes or dressings to cure such a disease as this? Is he to expend butts of wine, contending as it were against the elements? No! let him bear this always in mind—that no dressings have ever been found to stop this ulcer; that no quantities of wine or bark which a man can bear have ever retarded this gangrene; let him bear in mind that this is a hospital disease; that without the circle of the infected walls the men are safe; let him hurry them out of this house of death; let him change the wards, let him take possession of some empty house, and so carry his patients into good air; let him put them in a school-room, a church, on a dunghill, or in a stable (like *Paré*'s gangrened Soldier); let him carry them any where but to their graves. No expence should be spared; for these are men who have entitled themselves to care, by every claim which men can have; and no one will dare to check the surgeon in these his most important duties. You are not sent out with only the amputation knife in your hands; you are appointed to save the lives of your sailors or soldiers by all possible means: you are to conduct yourselves not like mere mechanical surgeons, like men capable only of doing over again what they have seen or heard described in schools; nor like men without sense, reflection, prudence, or those free and manly conceptions which your distinguished situation and new and various duties require: you would willingly expend your own fortune in such a cause;—then do not grudge to employ the revenue of the state, for it is employing and not abusing it! This is not profusion, but the wisest and best economy: if in the course of a few weeks sixty men die of the disease in your hospital, government has lost a sum which would trebly buy your hospital itself!—the gross value of so many men in money, as they are reckoned on the muster books, being full fifteen thousand pounds.

'Till some change of situation be accomplished, little can be done for men labouring under this plague; but when the disease first breaks out and rages, and

hile:

while you are meditating ſome change, or concerting plans for ſuppreſſing the diſeaſe, you will find opium of infinite ſervice in checking the diarrhœa and fever, for theſe are greatly aggravated by the irritation and pain: you muſt try to ſupport the ſtrength of your people by wine and cordials, and generous food, adminiſtered ſparingly; and be careful not to overload their ſtomach with bark at a time when they are little able to bear any thing but a decoction, or a ſmall doſe of the powder. As for external applications, tinctures of myrrh, aloes, and other drugs ſtill more ſtimulant, are improperly uſed in this caſe, as they have no effect while the ſlough remains, and, when it gives way, produce unſpeakable torture. Of theſe I cannot approve: keep your tinctures and balſams for fiſtulas, and your torturing ſtimulants for thoſe local diſeaſes which may be cured by them; but this, not being a local diſeaſe, cannot be cured by local applications, and therefore the mildeſt are the beſt; as, for inſtance, a ſolution of ſal-ſaturni, which is a gentle aſtringent.

'The hoſpital ſore is a general diſeaſe in which your whole attention is to be directed to the ſtate of the ſyſtem, and that is ſuch as will not be eaſily ſet to rights. But there is one general fact which is very intereſting: we cannot but obſerve how much and how ſuddenly the powers of the living ſyſtem riſe after being depreſſed; we cannot but remark how after a ſhort fever the ſyſtem acts with uncommon vigour, how every diſeaſe diſappears before the fever, and how the patient thrives after it is gone. We ſee alſo plainly the moſt wonderful effects from that tumult of the ſyſtem which is produced by hyoſciamus, belladonna, digitalis, cicuta, mercury, and other violent drugs. Even a violent vomit excites the abſorbents, and ſets the whole ſyſtem to work. Surely it muſt be from plunging the ſyſtem into a ſudden ſtate of debility that it regains its elaſticity (if I may expreſs it ſo) or recovers its ſuſceptibility with regard to the ordinary powers of life: I know of no other way by which we can account for the ſingularly

good effect of evacuations in many diseases. It is on this ground that in the beginning of all fevers I still approve the old practice of vomits, purges, and abstinence, by which I often see the system recovered from its oppression, and restored to that freedom of action, and that aptitude for stimuli, upon which much of the cure depends, and by which the system is prepared, as it were, for the action of those powers, as opium, bark, wine, and mild but nourishing diet, upon which we are to trust for accomplishing the cure. I think in this hospital ulcer I have seen such practice useful; but I am so undecided with regard to the true practice in this disease, that I speak with diffidence, and would have you, if you do venture into this difficult path, proceed with so much caution, that you may, as it were, feel your own way: if you use evacuations, or a strict diet, it is but for a time, and in the expectation of renewing your stimuli gradually, and giving them a greater power over the system. I have always regarded the fear of evacuations as a vulgar apprehension; I am persuaded that moderate evacuations have no effect in producing debility; that evacuations, by freeing the primæ viæ, or the circulating system, from an unmanageable burden, often revive the strength; that healthy solids will soon form new fluids; and if the solids be in a high and healthful state of activity, it signifies little, comparatively speaking, whether there be one particle of food in the primæ viæ, or one drop of blood in the arteries more than is barely necessary to preserve them in action.'

The next *Discourse* is confined exclusively to bandages, their uses, and modes of application: but little of this could be made intelligible without reference to the figures. The author properly cautions the young surgeon against that rage for simplifying, which would substitute the night-cap, waistcoat, and stocking, to the exclusion of all other bandages. They, in fact, he observes, supersede no bandage; they are only useful where bandages are not required.

Discourse

Difcourfe 5 treats of Hæmorrhagy, a fubject of too much import to be fuperficially mentioned: we fhall, therefore, referve its confideration for our next number.

(To be continued.)

ART. LIV. *An Account of a new Mode of Operation for the Removal of the Opacity in the Eye, called Cataract. By* SIR JAMES EARLE, *F.R.S. Surgeon Extraordinary to the King, and Senior Surgeon to St. Bartholomew's Hofpital.* 8vo. 68 pages, price 3*s.* London, 1801. JOHNSON.

THERE are two modes in ufe for the cure of that fpecies of blindnefs which is occafioned by an opacity of the cryftalline humour of the eye; one effects the purpofe by depreffing the opaque cryftalline towards the bottom of the eye (the body being fuppofed to be placed erect), and which operation is termed couching; the other confifts in extracting the lens through the pupil, by an opening made in the tranfparent part of the cornea. The former of thefe operations, indeed, has nearly become obfolete, except under fome peculiar circumftances, extraction of the cataract being now very generally preferred.

But although the preference in operating is manifeftly due to the extraction of the lens, there are inconveniences of no fmall moment to which this alfo is liable. Thus the unfteadinefs of the eye in fome patients, and its rapid inverfion towards the nofe at the firft touch of the inftrument, or the fudden difcharge of the aqueous humour, which is fometimes attended with the falling down of the iris into the way of the knife, occafionally prove embarraffing to the moft experienced operators. Again; when the cataract is large, or the iris not in a very dilatable ftate, this membrane is liable

to be lacerated, or to be rendered paralytic by the diſtention. The cicatrix of the cornea, too, occaſions a degree of opacity in this part, which muſt in ſome degree, and in certain directions, impede the paſſage of the rays of light to the bottom of the eye.

For reaſons ſimilar to the above, the author of the preſent pamphlet remarks, he has been long diſſatisfied with the operations both of couching and extracting, as hitherto practiſed; and he thinks he has diſcovered a method of removing the cataract, by which the inconveniences complained of may be avoided. This conſiſts in making an opening behind the iris, and extracting the lens in this way, inſtead of through the pupil, as ordinarily practiſed. This mode of operating, indeed, is recommended by Mr. *Benjamin Bell*, in his *Syſtem of Surgery*, but it does not appear that he ever put it in practice on the human ſubject. He recommends that an inciſion be made about the tenth of an inch behind the tranſparent cornea, of ſufficient ſize to let the cataract paſs, and then a ſharp-pointed hook to be introduced, to ſtick into the lens and bring it away.

'I cannot ſay,' the author remarks, 'that this method appeared to me completely eligible, as the hook ſeemed ill adapted to get hold of the lens, and bring it out through the inciſion; or, if it could accompliſh that, it could not command the little floating parts of the capſula, which might be left; and, as it had not been ſanctioned by experience, I did not feel inclined to adopt it.

'In the compilation of *Lawrence Heiſter*, there is ſome account of a needle made to ſplit, or open and ſhut, by means of which the author appears to have intended to take hold of any portion of the membrane or capſule which might be left after couching; and by turning round the needle to have entangled it, and brought it away; but he does not ſeem to have had an idea of extracting any part of the cataract. Indeed, from the minuteneſs and form of the ſplit needle, it is evident that it would have only cut through the cata-

ract, and was incapable of maintaining its hold. It is alſo to be obſerved, that in this inſtrument the pointed or ſharp part, neceſſary to pierce through the coats of the eye, protruded beyond the ſhorter part of the blade, and remained in the eye while the blades were opened, and till the operation was finiſhed. This circumſtance muſt have rendered any uſe which could have been made of the expanſion of the needle awkward, difficult, and dangerous, as it had the ſame diſadvantages which were remarked when ſpeaking of the uſe of the common couching-needle. On the efficacy of this inſtrument, Heiſter himſelf expreſſes a doubt that it ever was made uſe of to advantage. The concluding words of his account of it are—"Ego valde dubito an unquam cum fructu eadem (acus) fuerit adhibita."

'Mr. *Hodſon*, an ingenious and ſcientific practitioner at Lewes in Suſſex, alſo ſhewed me a needle which he had invented with a view to remove any portion of capſula which might be left after couching, or which might afterwards become opake. Mr. H. informed me he had not made any trial of it; but, as it was conſtructed ſimilarly to that deſcribed by Heiſter, it was, of courſe, liable to the ſame objections.

'As none of theſe methods completely met the idea I had conceived of the practicability of extracting the body of the lens behind the iris, the ſubject continued to engage my attention, which has at length ſucceeded in the contrivance of an inſtrument which I hope will be found not inadequate to the purpoſe.

'The inſtrument which I now take the liberty of offering to the conſideration of the profeſſion is ſimple, and capable of executing the purpoſe for which it is deſigned, without the aid of knives, ſcoops, hooks, ſciſſars, or any other aſſiſtance; and ſimplicity, or the avoiding a multiplicity of inſtruments, muſt ever be allowed no inconſiderable deſideratum in all operations. It conſiſts of a ſmall ſpear-pointed lancet, of a proper breadth, which introduces a pair of fine forceps into the globe of the eye; and, when ſufficiently inſerted, the

ſharp

ſharp or ſpear-point, by means of a ſpring, is withdrawn, leaving the forceps behind: with theſe the cataract may be gently ſeized, made to quit its connexions, and be brought away through the opening; and thus is completed the whole of the operation.

'To uſe this inſtrument properly, it is neceſſary to obſerve, that it ſhould be paſſed in through the coats of the eye, juſt behind the iris: when it has paſſed, and the forceps are ſufficiently introduced, the lancet is to be made to retire, and the forceps are to be carried on till the blades appear behind the pupil, when they are to be retracted a little, then gently opened, and the cataract to be ſeized with as ſmall compreſſion as may be without ſuffering it to eſcape; the forceps are then, together with the cataract, to be brought out of the eye. If the lens be not ſufficiently firm to bear the preſſure of the forceps, or if, from any other cauſe, the whole be not taken away by the firſt extraction, the inſtrument may be again ſafely introduced through the opening, without the point, and in general with eaſe; but if the tunica conjunctiva be of a looſe texture, and covers or hides the opening through the ſclerotica, a ſmall fine director may be firſt paſſed to facilitate its reintroduction.

'The extraction of the lens is certainly the moſt ſatisfactory termination of the operation which I have deſcribed, and what is to be aimed at. With regard to the practicability of this operation I do not now ſpeak theoretically, having had ſeveral opportunities of proving it. If, however, any difficulty ſhould occur with regard to the extraction, or if from any reaſon it ſhould be thought more advantageous to leave the whole or any part of the cataract within the eye, this inſtrument, capable of acting in a double capacity, becomes the beſt of all poſſible couching-needles, as, being blunt, it cannot wound the iris, or do any miſchief; being broad, it has great command over the lens, and, either ſhut or a little open, will readily tranſport any portion of the cataract to a part of the eye where it can lie out of the paſſage of light, till it is abſorbed, which, when freed from

from all its connexions, takes place in no great length of time. I ſpeak with a degree of confidence of the abſorption, having many times obſerved portions of opake cryſtallines which have been completely detached from their connexions by the couching-needle, and which have been left in the aqueous humour both in the anterior chamber and behind the pupil; and I have watched them till they have gradually leſſened and become inviſible.—Thus, then, either by couching or extracting, this inſtrument will be found capable of acting well in every caſe in which there are any grounds for expecting ſucceſs.'

When the capſule of the lens is found to adhere to the iris, as is ſometimes the caſe, the inſtrument above deſcribed, the author thinks, will be far better than any other in common uſe. It is of no conſequence, he remarks, of what ſpecies the cataract is; for, if it ſhould prove fluid, the contents of the bag will be let out, and if any opacity of the capſule exiſt, it may be removed.

Other advantages which the mode of operating here recommended poſſeſſes are thus pointed out. 'It ſhould be obſerved, with regard to the wound which is made by the little ſpear to introduce the forceps, that it need not be more than one-fourth part ſo large as the inciſion which, in the uſual operation of extraction, is made through the cornea; and it is well worthy of remark, that this wound is made in a ſafe part behind the pupil, where the active or efficient parts of the eye are not concerned.

'On the paſſage of the forceps through the vitreous humour, and in the uſe of them afterwards, not nearly ſo much derangement of the interior of the eye is produced as accompanies the common couching-needle which was always uſed very freely, and preſſed down very low to enſure the poſition of the cataract in a part of the eye from whence it ſhould not riſe and re-appear; and all the miſchief which, as has been remarked, a ſharp inſtrument is capable of doing in the eye, is by theſe means avoided.

'It

'It may appear extraordinary to perfons unacquainted with the caufe, but it is a fact, that, though any minute particle lying on the external coat of the eye caufes fo much uneafinefs, by creating friction in the motion and action of one part of the coat on the other, the paffage of an inftrument through all the coats gives very little pain: fo that except the tunica conjunctiva, the fenfibility of which is not great, unlefs increafed by irritation, the other coats appear to be infenfible. This is a moft pleafing circumftance refpecting the operation; but what is of more importance is, that the part in which the incifion is made is immoveable; confequently the edges of it muft remain in contact, and, as it is covered with the tunica conjunctiva, which is moveable, the wounds through the different coats can fcarcely ever remain exactly oppofite to each other: the opening being thus covered and clofed, there can be no efcape of either the vitreous or aqueous humour, and it muft confequently heal with facility by the firft intention; and the happy refult of thefe favourable coincidents is, that the operation is really followed with very moderate inflammation.

'All thefe circumftances are very materially different, from having to attend to the management and difpofition of a large *moveable* flap of that moft important part of the eye, the cornea tranfparens; and, befides, when it is confidered that in this operation the iris or pupil can never receive the fmalleft injury or moleftation, I make no doubt that it will be allowed to poffefs manifeft and great advantages.

'Indeed, I am much inclined to think that this inftrument is calculated to embrace the advantages, and to avoid the inconveniences, attending all the operations which have hitherto been practifed on the eye for the removal of the cataract; and, confidering the fubject in every point of view, I have great reafon to hope, that, by thefe means, an operation of the firft importance to mankind, which has hitherto been big with difficulty and danger, will be rendered comparatively eafy and fafe; and that it will be found capable of being executed by any practitioner who poffeffes an accurate

accurate knowledge of the ſtructure of the eye, has cool judgment, and a ſteady hand.'

Having thus deſcribed the operation, and the advantages it is ſuppoſed to poſſeſs, the author ſubjoins an account of the caſes in which he has had occaſion to employ it. He firſt tried it in the inſtance of a young man, who was born with cataracts in each eye, and in whom it ſucceeded as well as could be wiſhed. Two other caſes are related where the event was equally favourable; and theſe are all the inſtances in which the author has had an opportunity of performing the operation in queſtion. He obſerves, however, that, inſtead of introducing the inſtrument through the coats of the eye vertically, he now prefers to enter it in a horizontal direction, for the reaſon, that, when the lancet is retracted, the forceps may eaſily be turned vertically; and then the more they are expanded to ſeize the cataract, the cloſer they keep the ſides of the inciſion together, by which means any conſiderable diſcharge of the humours is abſolutely prevented.

ART. LV. *Traitée Raiſonnée de la Diſtillation, &c. A rational Treatiſe on Diſtillation, or Principles of the Art of Diſtillation. By* M. DEJEAN, Diſtiller. 2 vols. ſmall 8vo. price 7*s.* Paris, 1801. Imported by BOOSEY, London.

THIS is a republication of a work that has run through ſeveral editions, and thereby evinced the favourable opinion of the public with regard to its merits. It is to be conſidered leſs as a ſcientific treatiſe than as a practical work, containing every neceſſary inſtruction relating to the important proceſs of diſtillation. In this point of view it merits a favourable notice. Beſides a general account of the different methods of diſtillation, and a deſcription of the apparatus and inſtruments employed in it, particular directions

tions are given for the preparation of the various waters, ſpirits, eſſences, vulneraries, &c. &c. which fill the ſhops of the druggiſt, the apothecary, and the perfumer.

Art. LVI. *Dictionnaire de la Conſervation de l'Homme, &c. A Dictionary of the Preſervation of Mankind, or a Treatiſe on Hygiene and on Education, moral and phyſical: an elementary Work, adapted to every Capacity; in which an Attempt is made to deſtroy the Prejudices which exiſt; to furniſh uſeful Precautions to the different Claſſes of Society; and to afford Advice reſpecting the Accidents which require the moſt prompt Means of Relief. By* L. C. H. Macquart, *Phyſician in Paris, &c. &c.* Two large vols. in 8vo., about 1200 pages. Paris, 1800. Imported by Boosey, London. Price 18*s.*

THE general nature of the work before us may be gathered from the full title given above: with reſpect to its merits it is ſufficient for us to remark, that it is executed in a manner calculated to inſure the attainment of the objects the author had in view in compiling it. The alphabetical order has ſome advantages, perhaps, over a more ſcientific arrangement, where the object is merely to afford a general and ſuperficial knowledge of a ſubject: and nothing more than this is here intended.

Art. LVII. *An Epitome of Chemiſtry. By* William Henry. 12mo. ſecond edition, price 5*s* 6*d.* London, 1800. Johnson.

THIS little volume is divided into three parts. Part I. is intended to facilitate to ſtudents the acquiſition

acquiſition of chemical knowledge, by minute inſtructions for the performance of experiments. Part II. contains directions for the analyſes of mineral waters, of earths and ſtones, of ores, of metals, and of mineral bodies in general. The third part contains inſtructions for applying chemical teſts and re-agents to various uſeful purpoſes.

The plan and objects of this work, as the author himſelf obſerves, are ſufficiently diſtinct from every other compendium of chemiſtry to authorize its addition to the extenſive liſt of elementary treatiſes already before the public. One of the objects of it is, to ſerve as a companion to the collections of chemical ſubſtances, which the author, in conſequence of the repeated ſolicitations of ſtudents, has been induced to fit up for public ſale.

ART. LVIII. *The Phyſical Principles of Chemiſtry. By* M. J. BRISSON, *Member of the French National Inſtitute, and Profeſſor of Chemiſtry, &c. Tranſlated from the French. Illuſtrated with engravings.* 8vo. Price 10*s.* London, 1801. VERNOR and HOOD.

ELEMENTARY Treatiſes on Chemiſtry have abounded of late; a happy proof of the growing taſte for one of the moſt important and uſeful of the ſciences. The preſent work contains much uſeful matter within a ſmall compaſs, and deſerves to rank with the beſt of its kind. The author has given very ample tables of the combinations of all the acids with the ſalifiable baſes, in the order of their affinities, ſo far as yet known. The various proceſſes are deſcribed with preciſion, and illuſtrated by excellent engravings of the neceſſary apparatus.

ART. LIX. *New Progreſs of Surgery in France; or Phenomena in the Animal Kingdom. Publiſhed by Command of the French Government. Tranſlated from the French of* IMBERT DELONNES, *M.D. By* T. CHAVERNAC, *Surgeon.* 4to. 31 pages, with 3 plates. London, 1801. DULAU & Co.

THE reader of the above impoſing title-page would not readily conceive that its only object was to introduce the relation of an extraordinary inſtance of Sarcocele (extraordinary from bulk chiefly), and which ſeven out of eight ſurgeons, in conſultation, had declared to be incurable, but which M. *Imbert Delonnes* was bold enough to undertake the extirpation of, by the knife, with complete ſucceſs.

The ſubject of the caſe was *Charles de la Croix,* a man who makes a diſtinguiſhed figure in the French Revolution, and who, at the time he underwent the operation, was nearly ſixty years of age. When the amazing bulk of the tumour and its long duration are conſidered, its perfect cure by exciſion will certainly be deemed extraordinary; and had the operator diſplayed leſs vanity in the relation, and leſs contempt of his brethren in art, his ſtory would not have failed to excite a very lively intereſt in the profeſſional reader. The following is the author's deſcription of the caſe itſelf, and the operation performed for its removal.

'For about fourteen years, *Charles Delacroix* had been afflicted with a large Sarcocele in the left teſticle. The various remedies that had been indicated to him had proved inadequate to checking the progreſs of the diſeaſe. This enormous tumour, which weighed about thirty-two pounds,* was more projecting and bigger than the belly of a woman on the point of being

* It is ſuppoſed the Sarcocele was of 32 lbs. weight to the patient; for having weighed it two hours after the operation, when it had diſgorged itſelf, the weight of it then was 28lb. (French weight).

brought

brought to bed. It was entirely wrapped up in the ſcrotum, and neighbouring teguments, to the prejudice of all the generative organs which had totally diſappeared.

'It was ſeated more on the left than on the right ſide; in the ſhape of a rounded irregular heart, the baſis of which inclined to the right, and lay on the abdomen and thigh, on the ſame ſide. Its point was directed along the left thigh; its length fourteen inches,* nearly, and its height in the center ten. The ſpermatic cord, extended in like manner with the teſtis, formed the pedicle of the Tumour, and ſeemed to be propagated over the hypogaſtric region, the pubis, the perineum, and anus.

'Such was the ſituation of Citizen *Delacroix*, when he wiſhed to have a meeting of eight Surgeons, in whom he thought he could repoſe unlimited confidence. Each individual having duly examined the caſe, and the patient having withdrawn, a majority of ſeven againſt one gave in their opinion, that the Tumour was one amongſt thoſe that had been deſcribed under the puſillanimous and barbarous denomination of *noli me tangere*. It was pronounced *untouchable*. It was to be reſpected; it muſt infallibly oppreſs the unfortunate ſufferer who claimed the aid of Art to ſubdue it; in ſhort, that it muſt kill him was unavoidable.

'I happened to be the eighth Surgeon who had been called to the conſultation, and thought I could perceive that the cutting inſtrument might be of eſſential ſervice in a ſimilar occurrence. I delivered my opinion; but it appeared ſo ſtrange, that it was hardly liſtened to. According to ſome of thoſe gentlemen, it would caſt an *opprobrium* upon *Surgery*. In vain did I bring forth *Celſus*'s aphoriſm: *Meliùs anceps remedium experiri, quàm nullum*: the patient, ſaid they, muſt ſubmit to bear his painful exiſtence to the end, which an operation could only tend to abridge. In vain did I enquire upon what authority they were ſo poſitive with regard to the impotence of Surgery,

* French meaſurement.

the tortures and final diffolution of the wretched being who had folicited our meeting; my reclamation proved fterile; and, like an actor who is untimely obftinate in the fupport of a nonfenfical play, I was left alone on the ftage.'

The author, however, fo far gained the patient's confidence, as to induce him to fubmit to an operation for relief. 'In confequence of *Charles Delacroix*'s fixed determination, I prefcribed for him low diet during the courfe of ten days; and on th 27th Fructidor laft (13th September) in the prefence of Citizens *Monier*, *Duchanoi*, *Guillemardet*, *Collet*, *Coecon*, and *Poiffons*, all of them Surgeons, I proceeded to the actual performance of my intended operation, by opening the Tumour in its whole extent, and following the direction of the fpermatic cord; then, after feparating the Tumour from the integuments at the breadth of five fingers, I plunged my knife into one of the points that feemed to contain a particular kind of fluid. However, from a thorough conviction that the difeafe was a combination of adipofe and fchirrous glands, that had organifed themfelves around the injured tefticle, I diffected it completely, fo confcious was I of there being no other method of fucceeding.

'This very long and painful operation was performed *in five times:* this was a meafure dictated by prudence and neceffity: each interval which lafted feven or eight minutes, interrupted the fufferings of the patient who by dint of experiencing fome relief, felt his organs to refume fufficient powers to bear the operation to an end.

'The diffection of a Tumour of that magnitude cannot be accomplifhed properly without practifing feveral flaps in the integuments. The furface of the prefent one was furrounded with arteries and veins, which were to remain untouched in fome refpects, in order to prevent violent hæmorrhages. A tela cellulofa, loofe in fome parts and very tight in a great many others, efpecially near the *rapha*, prefented a diffection

tion ſometimes very difficult, at other times very eaſy to perform. The right teſtis, as alſo the corpora cavernoſa, and the urethra, were adherent to the maſs, which required a long labour to be extirpated. The penis was deprived of the covering which is ſupplied by the prolongation of the teguments in maſs. This covering being abſolutely become that of the Tumour, inſtead of the penis and right teſtis, only exhibited a ſecond navel, through which the patient let water, by means of a ſmall funnel-like conductor, which, being applied very cloſe to the aforeſaid navel, prevented the urine from running over the Tumour, or his clothes.

'Therefore, beſides the generative organs which were adherent to, and confounded with, the Tumour, I had alſo to preſerve that portion of the integuments, which prior to the diſeaſe had belonged to thoſe ſame organs. It was alſo requiſite, that, ſubſequent to the extirpation of the Tumour, thoſe integuments ſhould be immediately applied over thoſe ſurfaces that were become foreign to them, and that they ſhould reſume at once their former ſhapes and original rights.

'The ſecond navel, which I have mentioned above, ſerved me as a point of reunion; I was to find it at the extremity of the urethra. It was ſtill adherent to the baſis of the glans, which being oppreſſed and haled about no leſs than all the other parts, was become more ſlender and increaſed in length.

'I was not far from concluding my operation, the manual part of which laſted two hours and a half (the intervals included), when I had iſolated the Tumour, and laid aſide thoſe parts that were to be preſerved perfect and entire. But I had ſtill to encounter a pedicle dreadful indeed, either on account of its bulk, or of the difficulty of applying a ligature to it without danger. It was nearly ten inches in circumference; I was under an apprehenſion that the nervous and membraneous parts which entered into its contexture, could not

be subjected to a strong compression, without the intervening of acute pain in the loins and entrails, of convulsions and cramps, which accidents often become mortal.

'It became necessary, therefore, on the one hand, to use a ligature, loose enough to prevent those accidents; whilst on the other I must indispensibly oppose an efficacious powerful dike to the vessels, which, destined to nourish so voluminous a foreign body, had acquired additional diameter and thickness in their tubes, equally degenerated with all the other parts.

'I succeeded in this double pursuit by means of using several ligatures, and fastening the last I applied somewhat tighter than the others. I practised the first in the most neighbouring part to that which I was to cut off: then I made three more, gradually drawing nearer to the pedicle: the waxed threads which I used presented a flat surface about two lines wide.

'Next, the Tumour that was carried off with the knife le t a wound, the irregular surface of which might be compared to a large plate. I covered nearly the whole of the wound with part of the flaps I had retained, beginning by the neighbouring parts to the ligature. From thence I proceeded to the penis, which had been dissected and uncovered to the basis of the glans; next, to the sound testicle, the septum of which, as also the fibres of the dartos had been destroyed as far as the tunica vaginalis. To each of these organs I procured the covering they stood in need of. But I had still a vast quantity of useless skin left, which I cut off with a pair of straight scissars: this instrument, which is not so good as the knife in numbers of cases, is preferable, however, in the present case, in as much as it cuts with greater precision, provided you procure a prop over the part you wish to cover again with accuracy; besides the healing is more easily completed, and no deformity will ensue.

'The operation being ended, the wound was covered with dry lint in great profusion, in order that the pressure

preſſure of the dreſſing might be at once gentle yet ſufficient. The patient, when carried into his bed, was perfectly calm, after having vomited twice in the ſpace of half an hour, to rid his ſtomach of a little cruſt of bread and a ſmall glaſs of canary wine, which he had taken during the operation. During the interval of the two vomitings, he experienced ſlight faintings, which I had ſucceeded in preventing, in the courſe of the operation, by means of the aforeſaid interruptions.

'The vomiting was occaſioned by the continuity of the pain, which cannot but ſuſpend the functions of the ſtomach; perhaps even by the patient changing his poſition and moving from the ſcene of the operation into his bed.

'However, he afterwards underwent no painful ſenſation either in his loins or entrails, which appeared to me a very extraordinary circumſtance, ſince neither mental or bodily ſtrength can exempt from encountering thoſe accidents which will almoſt always happen in great operations, when the ſpermatic cord is concerned, and eſpecially when the amputation of that cord takes place.

'The mental fortitude which *Charles Delacroix* diſplayed in his cruel poſition, deſervedly procured to him that eaſe or calmneſs which he enjoyed before, during, and after the operation: the good effects attending that calmneſs are innumerable. To this ſame calmneſs may likewiſe be attributed the rare and precious advantage of having been free from the ſlighteſt fever during the courſe of his cure, the periods of which ſucceeded each other with wonderful rapidity.'

With reſpect to the real nature of the tumour in queſtion, there is nothing in the deſcribed ſymptoms or appearances ſufficient to characterize it a real carcinomatous affection; nor does the event better juſtify this idea, ſince abundant experience has proved the inſufficiency of an operation for the cure of carcinoma, where the ſpermatic cord has partaken of the diſeaſe

in any confiderable degree. The merit of the operator would have been more unqueftionable, had his determination to operate been founded on his difcernment of the milder nature of the affection.

By way of appendix, a cafe is fubjoined of extraordinary tumours attached to the point of the nofe, in a man 59 years of age. Thefe tumours were elaftic, though compact, and weighed about two pounds; they occupied the external furface of the nofe, and extended, without any adherence, over the buccinator mufcle and the chin, which they fcreened almoft entirely; clofing both the noftrils and the mouth, fo that the patient could neither fpeak, eat, nor breathe, without lifting the tumour up. The difeafe was twelve years in arriving to the magnitude defcribed, when its excifion was performed by M. *Delonnes*, and a cure fpeedily accomplifhed.

Art. LX. Petri Camperi *Icones Herniarum. Editæ a* Sam. Thom. Soemmerring. Large Folio, 16 pages of letter-prefs; with fourteen plates. Franckfort, 1801. Imported by T. Boosey. Price 2*l* 12*s* 6*d*.

THE prefent work, which is dedicated to the *London Society eftablifhed for the Relief of the Ruptured Poor*, affords a frefh inftance of the fplendid and fuperb ftyle of printing and engraving with which M. *Soemmerring* has fo often enriched the medical art. The fubject, it will be readily allowed, is one of great importance, and is here treated in a manner, as far as it goes, calculated to render it perfectly intelligible, and highly ufeful to medical and chirurgical ftudents.

The *Tables*, now firft publifhed, were completed, the editor obferves, long before the death of their author,

thor, but numerous and various avocations prevented their appearance before the public in his life time. The ſubjects of the plates, which are fourteen in number, and contain a great variety of figures, beautifully executed, are as follow:

The firſt and ſecond *Tables,* which are only indirectly connected with the ſubject of the work, contain the abdomen laid open in the ape *(Simia cynocephalus)*— the ſecond being the mere outline of the firſt, leſt the letters of reference had rendered the principal figure obſcure or confuſed.

The third *Table* ſhews the genital parts of the ſame animal, eſpecially the ring of the abdominal muſcles, and the true origin of the cremaſter muſcles.

The fourth exhibits a repreſentation of inguinal hernia *(entero-bubonoceles)* complicated with hydrocele: whilſt in the fifth the ſame ſubject is continued, and the hernial ſac is ſhewn ſeparated from the ſpermatic veſſels, and turned aſide in order that the courſe of the veſſels may appear.

The ſixth and ſeventh *Tables* exhibit the anatomy of an inguinal hernia on the left ſide. In the eighth, (ſame ſubject) the cremaſter is divided, that the peritonæal ſac, the ſpermatic veſſels, and the teſticle, may come into view.

The firſt and ſecond figures in the ninth *Table,* and ſome of thoſe in the two following ones, belong to the ſame ſubject, but exhibit the parts progreſſively, for the purpoſe of demonſtrating, firſt, that the hernial ſac is merely a proceſs of the peritonæum relaxed and fallen down; ſecondly, that the epigaſtric veſſels are in different ways brought into danger in the operation.

The eleventh *Table* exhibits the peritonæum laid bare, the hernial ſac, the epigaſtric veſſels, the muſculus rectus abdominis and pyramidalis. In the eleventh the parts are ſhewn ſeparately, and the proper place for the inciſion, in the operation for the bubonocele, pointed out.

In the twelfth *Table*, the hernial fac is raifed, that the courfe of the epigaftric veffels may be the more apparent; it fhews likewife that the fac, or dilated peritonæum, may be feparated from the neighbouring parts without injury to thefe; much fat being found furrounding the peritonæal procefs or fac, efpecially in corpulent fubjects.

Table thirteenth fhews the diftribution of the blood veffels near the groin, and the ftructure of the abdominal ring, as well in the male as the female fubject.

The fourteenth and laft exhibits a defcription of the various truffes and bandages in common ufe, and which are not generally to be found in chirurgical writers. Thofe which have been before clearly defcribed by *Bleguy, Petit, Heifter*, and others, are here omitted

It was the author's intention to have treated fully on the fubject of Bubonocele (the only fpecies of hernia he had inveftigated in a manner fatisfactory to himfelf): with this view he had planned a three-fold divifion of his work; the firft comprehending the anatomical defcription and ufes of the parts concerned in hernia; the fecond detailing the fymptoms of the difeafe; and the third, the treatment and modes of cure. We have to regret, however, that this plan was only very partially executed, the firft part only having been accomplifhed. The plates, however, with their explanations, are complete, and are the more ufeful, as, befides the elegance and accuracy of the defigns, they poffefs the great advantage of exhibiting the parts of the natural fize.

ART. LXI. *Cafes of Phthifis Pulmonalis, fuccefsfully treated upon the Tonic Plan; with introductory Obfervations. By* CHARLES PEARS, *F. M. S. F. L. S.*,

F. L. S., &c. &c. 8vo. 104 pages. Price . London, 1801. MURRAY and HIGHLEY, &c.

WHAT will the medical tribe say in excuse for their blindness or ignorance, and what obligation will not consumptive patients owe the author, when they are informed, that idiopathic phthisis is curable in almost every stage; that incipient cases are hardly dangerous; and that relief is always attainable? that, though the complication of other diseases with phthisis has been thought an insurmountable obstacle to its cure, the same treatment (the tonic plan) will be found equally appropriate and beneficial in removing those also? But such are the flattering prospects held out to us in the present work, from the employment of the tonic plan of treatment! By what fatality has it happened, that a method, "indicated by the *nature* of the disease, and which, regularly pursued, as directed by observation and experience, not only bids fair in theory, but has been *realized* in practice, as ensuring recovery to most, and relief to all," should have been again and again brought forward to public notice, and yet have as often, after trial, sunk into oblivion? We know of no way of accounting for this extraordinary fact, but by supposing, with the author in the following passage, that the patient 'prefers his disease to a cure,' or that practitioners have more of pleasure and profit in *killing* than in *curing* their patients.

'When an inflexible obstinacy prevails,' the author observes, 'as is frequently the case, especially after having found the inefficacy of those means that have been long employed in vain, the plan here recommended should never be urged; because, as it will never be fairly tried, the patient's life will pay the forfeit of his temerity. This, as I have often witnessed, I do not hesitate in saying, that, in many cases of phthisis, the patient *prefers his disease to a cure,* and

and rushes into the arms of death to gratify his unfortunate perseverance.'

The method of treatment here recommended as sovereign, is briefly this. Besides the use of a nourishing and stimulant diet, '*tonics* of all kinds, with such additions as the symptoms may severally require, are to be employed.' 'The means most effective may generally be found in the use of blisters, gentian, opii, vol. alkali, nitri, &c. not forgetting the advantages of tinc. ferri muriati, duly employed.'

In order that the general result of the tonic plan of treatment may appear, the following statement (including the case of the author himself) is given:

Cured - - - - - - - - - - - - - - - - - - -	21
Those who discontinued their medicines, under the beneficial effects produced, and who therefore may not improperly be said to *have refused a cure* - - - - - -	18
Died, including Mrs. T. from the effects of cold during her convalescency - - -	10
	49

'If, then, it appears, that out of forty-nine cases of a disease generally deemed incurable, even in their early stages, which was the reverse of the present ones, *twenty-one* were recovered; that eighteen *refused* their cure, by discontinuing their medicines, out of which number, moderation may fairly be allowed eight for recovery; there only remains *ten* who died; out of these *five* were excited by the effects of liquor, and apparently accompanied with affections of the liver; *three* were irregularly marked; *one* arose from a local injury, and *one* from the effects of cold, during a state of convalescency, where the patient, as the recital shews, had no danger to encounter from disease; and which case, therefore, may be added to the recoveries. So that there does not remain *one* that may be fairly said to have

have been lost; and although, from the variety of exciting and complicated causes, great loss is ever to be expected in disease, yet in one where a *single* recovery is regarded as miraculous, the result here, without panegyric, may surely be allowed manifest preference.'

'Many incipient cases cured have been thought undeserving of notice here.'

The author, in an advertisement prefixed to the work, solicits indulgence 'for the great haste in which the following pages were necessarily written, and especially the *cases*, as not being originally designed for publication.

MISCELLANEOUS.

§ 67. *Salutary Effects of Salivation in Consumption.*

DR. *Rush*, of Philadelphia, a gentleman well known to our readers for his bold innovations and speculations in medical practice, has related some extraordinary instances of the good effects of salivation in pulmonary consumption; we say *extraordinary*, because it has been almost universally supposed, hitherto, that mercury never fails to aggravate the symptoms of this affection.---" Facts, however, are stubborn things."---The first patient whose case is related (*New York Medical Repository*, vol. 5) was a sailor twenty-six years of age, and who was admitted into the Pennsylvania Hospital, in the second stage of pulmonary consumption. Eight ounces of blood were twice taken from the patient, with an interval of five days, and a milk and vegetable diet prescribed. Salivation was in this case unexpectedly brought on by the use of a medicine containing half a grain of calomel three times a day. 'It suddenly put a stop,' the author observes, ' to his cough, and removed every other symptom of his pulmonary disease. The salivation continued for ten days. I looked with a good deal of apprehension for a return of his consumptive symptoms after the spitting had ceased, but, happily, without finding them. In a week after, his mouth and throat recovered from the mercurial disease; and he earnestly solicited his discharge, as a vessel was about to sail from our port, in which he was anxious to enter as a sailor. He was accordingly discharged, as cured, on the 10th of January, 1801,'---in less than a month after his admission. We learn, however, by a subsequent account, that this patient returned to the Hospital with a recurrence of all his symptoms, occasioned, it is said, by a severe cold. Attempts were again made to relieve him by salivation, but without success: he died within a month of his re-admission.

In a second case, of a man 23 years old, in whom the disease was apparently in its last stage, mercurial ointment (we are not told in what quantities) was applied to the sides and breast, in order to excite salivation, which, however, was not produced, a soreness of the mouth only taking place. From this time his cough, fever, chills, and sweats, left him.

him. A cordial plan of diet, together with a free uſe of wine and porter, and an infuſion of colombo root, were conjoined.

Beſides the caſes above-mentioned, the author has arreſted this formidable diſeaſe, he obſerves, by gently touching the mouth with calomel, in two young ladies, who were affected with alarming catarrhs, which had ſupervened to previous debility of long ſtanding. Another caſe of conſumption, cured by a ſalivation of five weeks' duration, is recited on the authority of Dr. *Stewart*, a young phyſician of Philadelphia. The ſalivation, it is obſerved, in this patient, a woman of five-and- twenty years of age, was ſometimes interrupted by a diarrhœa, and by great morbid excitement in the blood-veſſels; but was always reſtored by checking the former by means of laudanum, and reducing the latter by means of blood letting. Dr. *Phyſick*, of the ſame place, likewiſe, informed the author of his having ſalivated two patients in conſumption with ſucceſs; and that he has hopes of curing a third, now under his care, by the ſame remedy.

In another letter to Dr. *Miller*, of New York, Dr. *Ruſh* mentions the following extraordinary inſtance of good effects in a caſe of conſumption, derived from a tonic and ſtimulant plan of treatment: it is greatly to be regretted that other practitioners have not met with equal ſucceſs from a ſimilar plan.

'In the month of December 1800, Benjamin Parker, aged twenty-ſix years, was admitted into the Pennſylvania Hoſpital, in the laſt ſtage of pulmonary conſumption. He was unable to ſit up in his bed. His expectoration was copious and purulent, and his pulſe weak and frequent. Without any expectation of curing him, I preſcribed a cordial ſtimulating diet, brandy toddy, liquid laudanum in ſmall doſes during the day, and from two to four grains of ſolid opium every night at bed time, and all chiefly with a view of ſmoothing his paſſage out of life. In my viſits to the Hoſpital after this preſcription, I frequently paſſed his bed, without giving him the trouble of offering me his pulſe. In the courſe of two weeks, Mr. Huchinſon, one of the apothecaries of the Hoſpital, informed me, with a ſmile, that Parker was much better. From this time I became more attentive to him, and had the pleaſure of finding his countenance and pulſe improving, and his cough leſſening every day. By perſevering in the uſe of the above remedies for ſix weeks, he recovered his ſtrength and fleſh, and was diſcharged on the 28th of February, without a ſingle ſymptom of pulmonary conſumption. This man had been a private patient of Dr. Caldwell, before he was ſent to our Hoſpital. After his recovery, I aſked the Doctor how long he thought he would live after he ceaſed to attend him? He replied,---" Not more than two weeks."---I ſhould have heſitated in communicating this caſe to you, had not every circumſtance that has been related been witneſſed by upwards of a hundred ſtudents of medicine who attended the practice of the Hoſpital during the laſt winter. However extraordinary this cure may appear, it was not the *firſt* time I had ſeen

ſimilar

ſimilar good effects from tonic diet and medicines. I preſcribed them for a ſailor of the name of Prichard, in the Spring of the year 1776, at his own houſe, and left him afterwards, expecting he would live but a few weeks. In a few months I ſaw him ſeated on the bench of one of the gondolas which was employed to defend Philadelphia in the revolutionary war. We recollected each other. He informed me that he ate his allowance, did his duty as a gondolier, and ſlept every night in the open air upon a blanket under his bench. I ſaw him a year afterwards in the ſtreet in good health. Perhaps his exerciſe in rowing for ſeveral months on board the gondola contributed to render his cure more complete.

'If theſe two caſes ſtood alone in the hiſtory of chronic diſeaſes, they would be ſufficient to teach us never to abandon patients in caſes apparently the moſt hopeleſs, without a parting effort to relieve them. They ſhew, further, that the remedies which are calculated to leſſen the pains which ſometimes accompany the paſſage out of life, generally give the patient the beſt chance of recovery.'

---

§ 68. *On the Quantity of Gelatine contained in Bones.*

It has been long known that bones, beſides their earthy ſubſtance, contain a large proportion of membranous and oily matters; and that theſe might be obtained, in part at leaſt, by long boiling in water, particularly in *Papin*'s Digeſter. It appears, from the experiments of M. *Prouſt*, as related in the *Journal de Phyſique*, *An.* 9, that the quantity of theſe matters that may be obtained greatly exceeds what could have been ſuppoſed by perſons unacquainted with the ſubject; ſo much, indeed, as to make it an object deſerving ſerious attention, in an œconomical point of view.

In the muſcular fleſh or meat of animals the gelatinous part is ſo looſely attached, as to be eaſily extracted by the proceſs of boiling. In proportion as the fleſh is full of blood, it has more or leſs of the albumen or coagulable lymph, which, inſtead of diſſolving during the boiling, coagulates like the white of eggs. It follows from hence, that boiling does not extract ſo great a quantity of gelatinous matter from meat as the abundance of its juices would ſeem, at firſt, to promiſe: and, in fact, experience confirms this; for it requires from three to four pounds of meat in order to procure a ſingle pound of gelly; whilſt from a pound of bone, properly prepared, may be extracted, however long it may have been previouſly boiled, from three to four pounds of gelly:---in ſo concentrated a ſtate does the gelatinous matter exiſt in the ſubſtance of the bone.

When

When ten pounds weight of the middle part of the leg-bone of an ox are cleared from the marrow and all adhering membrane, and broken in pieces, and boiled in the usual way for six hours, in a sufficient quantity of water, the quantity of hard gelatinous paste procurable on evaporation amounts to two drachms and a quarter. This, when dissolved in a sufficient quantity of water, makes nine ounces of gelly, that acquires a solid consistence on cooling; being in the proportion of one ounce of the paste, similar to what is termed amongst us *portable soup*, to thirty-one ounces of water. The same bones taken afterwards, and prepared by trituration, give nearly nine ounces more of gelatinous paste, or as much as will make eighteen pounds of gelly of the ordinary consistence; whence it appears, that the gelly contained in bones which have already undergone the common process of boiling, is to that procured from the raw bone in the proportion of thirty-two to one; or, in other words, bones as commonly treated by boiling give out only one thirty-second part of the nutritious juices they contain.

The heads, or articulatory parts of bones, appear to contain the gelatinous principle in still greater quantity; for ten pounds of these were found to furnish six drachms and a half of dry gelly by common boiling, and fifteen ounces more when prepared by trituration; being in the proportion of eighteen to one.

The same quantity of the haunch bones gave eighteen drachms and a half of dry paste or extract, and, after trituration, twenty-six ounces more; being in the proportion of about fifty-two to five.

An equal quantity of the rib and vertebral bones gave, after trituration, twenty-two ounces and two drachms of dry extract.

Ten pounds of mutton bones, taken indiscriminately, gave, after trituration, nineteen ounces and two drachms; whilst the bones of the hog furnished one drachm more than this quantity.

As most bones contain fat, the gelly prepared from them partakes in a degree of this, being thereby rendered somewhat milky or emulsive. Like the flesh, the flavour of the gelly varies in some degree, as procured from different parts. That of the ribs, for example, is more agreeable than that of the haunches, and this than that of the articulatory bones. The gelly obtained from mutton bones has the odour peculiar to that meat. The gelatinous paste thus prepared from all of them is unalterable in the air, and may be carried all over the world without injury.

Ten pounds of the richest butcher's meat, free from any bone, gave five ounces of dry extract or paste: the quantity will be rather greater if there should be much cartilaginous or tendinous matter intermixed. The gelly of meat is transparent, high-coloured, savoury to the taste, on account of its containing much muriate of potash, and free phosphoric

phoric acid. The dry paſte of this gives a leſs firm gelly in an equal quantity of water than that of bones. As it approaches to dryneſs it loſes its tranſparency, and the ſalts cryſtalize in its ſubſtance. It is difficult to dry it thoroughly, and hence its preſervation is attended with much more difficulty than the paſte procured from bones. Its colour is a deep brown; it is flexible and elaſtic, like the caoutchouc. Its flavour is ſtrong, and even diſagreeable, from the flavour of the meat being ſo highly concentrated. In a word, M. *Prouſt* obſerves, it bears no more reſemblance to the Engliſh *portable ſoup* than a piece of refined ſugar does to the juice of liquorice. What ſtuff, therefore, he aſks, muſt not enter into the compoſition of the *portable ſoup,* to give it the conſiſtence and the cheapneſs we find it has?

It appears, therefore, from the experiments above recited, and from others which we have not noticed, that the mean quantity of dry gelly or extract which can be procured from the different kinds of ox bone mentioned, is eighteen ounces from ten pounds of the bone, whilſt five ounces only can be obtained from an equal quantity of meat; that the broth of meat and the diluted gelly contain each the ſame proportion of nutritious matter; and that the bones of other animals are capable of producing a ſimilar effect. The importance of the ſubject, therefore, is ſufficiently apparent, ſince a vaſt quantity of nutritious matter may be eaſily procured from a ſource that, in this reſpect, has been hitherto wholly unproductive.

But it is not a nutritious aliment only that can thus be procured from bones thrown away as uſeleſs; a quantity of fat may alſo be obtained that will well repay the labour beſtowed on it; and ſuch bones as contain a large portion of oil in their ſubſtance, as the haunch bones, the articulatory proceſſes, &c., are rendered better for the preparation of the gelly after the oil is extracted. Sixteen pounds of the haunch bone of the ox being chopped into ſmall pieces, about an inch in cubic meaſure, and boiled in water for about a quarter of an hour, gave, on cooling, a cake of fat or ſuet that weighed two pounds, whilſt the heads of the long bones gave double this quantity.

The whole art of extracting the gelly of bones conſiſts merely in breaking them into powder, and boiling them in water for a ſufficient length of time. Thus ten pounds of the powder may be boiled with eighty or an hundred pints of water in a tinned kettle, having a cloſe cover, that the degree of heat may be increaſed ſomewhat beyond the ordinary boiling point. The boiling is to be continued till the liquor is reduced to about fifty pints, more or leſs, according to the kind of bones employed. This conſtitutes a gelly that may be afterwards evaporated to a proper conſiſtence to form the dry paſte or portable ſoup; which is beſt prepared by a mixture of this with the extract of the fleſhy parts.

§ 69, *On*

§ 69. *On the ſuppoſed Magnetic Property of Nickel.*

We mentioned lately a ſuppoſed diſcovery, that a magnetic property was not, as had been generally thought, confined excluſively to iron, but that nickel poſſeſſed the ſame, as well as cobalt: ſome late experiments of Mr. *Chenevix* ſeem to ſhew this opinion to be unfounded. He has been able to obtain nickel in a metallic ſtate, which was not in the leaſt attractable by the magnet. For this purpoſe, an acid ſolution of the oxyd of nickel was precipitated by ammonia. The alkaline liquor, holding in ſolution a portion of the metal, was, after filtration, evaporated, the oxyd of nickel falling down as the ammonia became volatilized The oxyd thus procured, after being again reduced to the metallic form, did not exert the leaſt viſible influence on the magnet. The ſuppoſed magnetic property, therefore, of the metal appears to be owing to a minute portion of iron adhering to it; and how ſmall a quantity of iron is neceſſary to produce this effect is evident from hence; that a lump of copper, being merely ſtruck with an iron hammer on an anvil, ſometimes acquires the power of influencing the magnet.

Magnetiſm appears from hence to be a more powerful re-agent to detect minute portions of iron, when in its metallic ſtate, than either a ſolution of gall nuts, or of pruſſiat of potaſh.

---

§ 70. *Proceſs for Extracting the Sugar from Honey. By* M. Cavezzali. (An. de Chym. 115.)

Having reflected that honey was a mixture of ſugar and mucilage, in order to the ſeparation of thoſe principles, M. *Cavezzali* heated it with charcoal; but without ſucceſs. He remarked that honey became liquid by time; that it whitened and poliſhed metals; that when purified its vapour irritated the trachea: he concluded, therefore, from theſe circumſtances that it contained an acid in its compoſition, and that this was the obſtacle to the cryſtallization of the ſugar.

In order to deprive it of this acidity, the following proceſs was employed. He took white honey and placed it over a gentle fire in an earthen veſſel: it was then ſkimmed and ſtrained, and powdered egg ſhells added, till all effervefcence ceaſed. The veſſel was then taken from the fire, and ſet by, to ſettle for ſome time. A denſe ſcum which had formed on the ſurface was removed, and the liquor repeatedly ſtrained, when a true ſyrup of ſugar was obtained, free from the pungent flavour of the honey itſelf, and which, when uſed in ſweetening liquors, was miſtaken for real ſugar.

This ſyrup being ſuffered to reſt in a bottle for ſome months, the veſſel containing it was found covered with cryſtals of ſugar, of a reddiſh

hue, and which attracted moiſture from the atmoſphere. Both theſe properties were deſtroyed by waſhing it with alkohol.

In performing the above proceſs the following cautions are ſuggeſted, 1. That the honey be white and pure. 2. That it be clarified with whites of eggs. 3. That the veſſels employed in the operation be always of earthen ware. 4. That the bottom of the veſſel only be expoſed to the fire, leſt the heat act too ſtrongly on the mucous ſubſtance. 5. That, after ſtraining, it be returned over the fire quite hot. 6. That the egg-ſhells be added by little and little, in order to avoid clots or maſſes being formed. 7. That when the ſaturation is complete, the veſſel be removed from the fire, and ſuffered to reſt for an entire day. 8. Laſtly, the froth is to be ſkimmed off, the reſiduum waſhed, and filtered, and the whole evaporated to a proper conſiſtence.

---

§ 71. *Uſe of Oil of Henbane (Hyoſciamus niger) in Spitting of Blood.*

Profeſſor *Hartz* of *Erlangen*, Germany, ſtrongly recommends, in caſes of pulmonary hæmorrhagy, what he terms the *oleum hyoſciami*, prepared by boiling eight ounces of olive oil with two ounces of freſh-bruiſed leaves of the henbane. Of the oil thus prepared he mixes one part with two parts of oil of ſweet almonds, and gives a tea ſpoonful twice or thrice daily; ſeldom more. The ſpitting of blood, he obſerves, diminiſhes after the firſt doſes, and ſoon ceaſes altogether. Should it return, a repetition of the remedy never fails to reſtrain it immediately. Sometimes the profeſſor exhibits the extract of the plant in a mucilaginous mixture; and this, indeed, would ſeem to be the preferable mode; for oil not being the proper ſolvent of the extractive parts of vegetables in general, the preparation, as here ordered, muſt be liable to great uncertainty in point of ſtrength.

The particular ſpecies of the diſeaſe in which the remedy above mentioned is particularly indicated, according to the author, is that cauſed by an exceſs of irritability, and with more or leſs of a ſpaſmodic action, in the pulmonary veſſels. In the torpid ſtate of theſe parts it would rather prove injurious. The ſlight vertiginous ſymptoms which ordinarily follow the uſe of this remedy are not of ſufficient importance, the profeſſor obſerves, to induce us to ſuſpend its uſe.—Hufeland's Journal, vol. 9.

---

§ 72. *Experiments and Obſervations to prove that Snow is not poſſeſſed of any poſitive fertilizing Property. By* M. Carradori. (*Journal de Phyſique, An.* 9.)

The opinion that ſnow poſſeſſes properties capable of giving fertility to the earth, has pretty generally obtained; and M. *Haſſenfratz*, a German philoſopher,

philoſopher, conſidering the fact as eſtabliſhed, accounted for it by ſuppoſing that ſnow contained oxygen in a fixed or combined ſtate; in other words, that ſnow was an oxygenated water, and owed its fertilizing property to this circumſtance. No experiment, however, of M. *Carradori* enabled him to diſcover the preſence of oxygen in ſnow; and he ſhews, in the paper above mentioned, that ſnow water has no ſenſible advantage over common water in reſpect to its influence on vegetation.

M. *Carradori* began by immerſing different ſeeds in ſeparate portions of ſnow-water and of common well-water, covering the ſurfaces with a layer of olive oil, in order to prevent all poſſible action of the atmoſphere on the water contained in the veſſels. At the end of twelve days no ſign of germination appeared in either caſe; but the amylaceous or feculent part of the ſeeds employed (grains of barley and wheat) had become ſoft, and had acquired a degree of acidity.

Had the ſnow-water, as M. *Haſſenfratz* imagines, been charged with oxygene, it would have occaſioned the developement of the ſeeds immerſed in it, by communicating to them the oxygene neceſſary to the proceſs of germination; for it is certain that germination does not take place without the preſence of oxygene or vital air, which, according to the opinion of M. Carradori, is neceſſary to the converſion of the amylaceous and gummy parts into a ſaccharine matter, becoming in this way fit to nouriſh the tender embryon of the plant. It is well known that air is neceſſary to vegetation; for ſeeds do not germinate *in vacuo*, at a conſiderable depth below the ſurface of the earth, in cloſe veſſels, in mephitic gaſes, nor, laſtly, in any circumſtances where they have not a free communication with the atmoſphere; whilſt, on the contrary, they ſhoot with greater rapidity in proportion as they imbibe oxygene; as proved by the recent experiments of *Ingenhouz* and *Senebier*.

Moreover, it is certain, from the experiments of *Humboldt* and *Decandolle*, that fluids really charged with oxygene, as the oxy-muriatic acid, accelerate germination; and it acts, M. *Carradori* ſuppoſes, by its oxygene combining with the feculent part of the ſeeds, and forming ſugar; the aliment neceſſary to the embryon being thus more quickly prepared, it forwards the growth of the young plant. Some ſeeds that do not germinate in ſimple water till after the lapſe of twenty-four hours, begin to ſhoot in ſeven hours in water containing the oxy-muriatic acid. The nitric acid, in like manner, according to the experiments of M. *Decandolle*, accelerates germination, when ſufficiently diluted. If, therefore, ſnow, as M. *Haſſenfratz* ſuppoſes, was water ſaturated with oxygene, it ought, in like manner, to promote vegetation. Other experiments with ſnow-water and ſimple water ſhewed not the leaſt ſuperiority of the former in promoting vegetation, either of ſeeds or plants.

Although the ſeeds did not germinate in water whilſt its ſurface was covered with a layer of olive oil, preventing the acceſs of atmoſpheric air, yet it was found that ſlips of different plants, the ſtems and roots of

 which

which were immerſed in water in like manner covered with oil, vegetated in the uſual way.

But although water deprived of oxygene may ſerve to nouriſh plants, when applied to their roots, nevertheleſs, plants in general, the author obſerves, attract the oxygen the water contains, and conſume it almoſt entirely. This was proved in the following manner. The roots of a young plant of the common ſtinging-nettle were immerſed for four days in a phial of well-water, the ſurface of which was covered with a layer of olive oil. On withdrawing the plant, and putting into the water a ſmall fiſh, it died in a very ſhort ſpace of time. That the animal did not die from the preſence of carbonic acid, or from any putrid contamination of the water proceeding from the maceration of the roots, appeared from hence, that a ſecond fiſh lived in the water without inconvenience, when the oil was removed from the ſurface.

Ice and hail-water were found equally indifferent to vegetation with ſnow-water, and produced preciſely the ſame effects.

---

§ 73. *Galvanic Pile of* Volta.

M. *Erman*, Profeſſor of Phyſics at Berlin, points out an inaccuracy of language with reſpect to the conſtruction of the galvanic pile, as deſcribed by Mr. Nicholſon and others, which merits notice, as it appears to have conſiderably influenced the relation of experiments which has been given, and to have introduced confuſion and apparent oppoſition of facts, when in reality none exiſted. In the directions for building the pile, we are told to employ the metals and wetted paſteboard or cloth in the following order; *ſilver, zinc, paſteboard,* &c.: the lower extremity of the pile is conſequently called the *ſilver pole,* and the upper the *zinc pole* or *extremity,* becauſe, in fact, we begin with a ſilver plate and end with one of zinc. But as it is demonſtrated that the effect of the electric charge takes place at the ſurfaces of the metals which are ſeparated by the wetted paſteboard, and not at all at thoſe ſurfaces which touch each other, it is evident that the piece of ſilver which is at the bottom under the zinc, and in immediate contact with it, is abſolutely ſuperfluous, and produces no other effect than the metallic armour, or any other conducting ſubſtance, placed there. So that, in a pile conſtructed in the ſeries of *ſilver, zinc, paſteboard,* and ſo on, counting from below upwards, the true *zinc pole* really exiſts at the lower extremity of the pile, which almoſt all writers on the ſubject have termed the *ſilver pole.* In like manner, the real *ſilver pole* exiſts at the top of the pile, although terminated, in fact, by a plate of zinc; this being altogether inactive.

§ 74. *On*

§ 74. *On the Acetic Æther.*

The different æthers which have been formed by the ſulphuric, nitric, and acetic acids, have been ſuppoſed by M. *Fourcroy*, and chemiſts in general, to be merely varieties of the ſame ſubſtance, owing their difference ſolely to the admixture of a certain portion of the acid employed in their formation. But other ſtriking differences have been obſerved, and pointed out by M. *Pelletier*, in the *Journal de Phyſique*, *An.* 9, which ſeem to ſhew a real difference in compoſition.

The changes which alkohol regularly undergoes, during its ætherification with the ſulphuric acid, are not the ſame as when it is treated with the acetic. In the former caſe the ſpirituous liquor acquires ſeveral degrees of levity; in the ſecond it becomes ſenſibly more heavy during the operation: and the difference in this reſpect is very ſtriking; for the moſt perfectly prepared acetic æther does not exceed in ſpecific gravity thirty-five to thirty-ſeven degrees of *Baumé*'s Aerometer, whilſt the ſulphuric æther riſes as high as ſeventy degrees. Alkohol itſelf reaches forty; five degrees higher than the acetic æther.

This increaſe of weight in acetic æther, M. *Pelletier* attributes to the preſence of carbone; for he found, that when three ounces of acetic æther were digeſted with an equal weight of the ſulphuric acid, in a ſand heat, a greater quantity of coaly reſidue was found after the decompoſition was completed than when alkohol was employed in place of the acetic æther.

---

§ 75. *Obſervations on the Tænia, or Tape-Worm. By* Etienne Perrolle, *Member of the Academy of Sciences at Turin.* (*Journal de Phyſique, An.* 9.)

The following caſes and remarks on this ſubject are both new and intereſting:

Caſe 1. A woman, twenty-five years of age, after much ſuffering, diſcharged by ſtool, at different intervals, a conſiderable number of bodies of the following deſcription: they were flat, about two lines in breadth, thin, whitiſh, and varying in length from one to three inches. Diviſions or knots were with difficulty diſcernible at ſhort diſtances: no bluiſh line, as in the tænia, could be perceived running along their length; nor was any ſpot obſervable on their ſurface. Some of theſe bodies were put into water; and it was obſerved that they were almoſt all cleft or ſplit, ſometimes at one extremity only, and ſometimes at both. The diviſion extended through two or three of the rings. When the divided parts were ſeparated, one might fancy one ſaw an animal with two or

with four horns, according as the diviſion exiſted at one or both ends at the ſame time. Some of the portions were not at all divided.

Did theſe white ſubſtances, the author aſks, make a part of the common tape-worm? or ought they to be conſidered as ſo many individual animals? He inclines to the former opinion, for the following reaſons: 1. becauſe thoſe matters poſſeſſed no ſpontaneous movement; 2. becauſe we know that portions of the tape-worm ſeparate readily from each other; and, 3. becauſe that, in adopting the latter opinion, we muſt ſuppoſe the exiſtence of an infinite number of individuals of a ſpecies which does not commonly multiply to any extent in the human body.

There is reaſon to believe, therefore, that the organized maſſes above deſcribed made part of a tænia, but which was peculiar in having a number of longitudinal diviſions in different points of its length. This conjecture is rendered ſtronger by the following facts related by the author. A celebrated inoculator, M. *Mazars* of *Cazalès*, phyſician at Touloufe, had occaſion to obſerve, thirty years ago, a tænia, pierced or divided through its whole ſubſtance, a deſcription of which he publiſhed in the *Journal de Medecine*. This worm, which ſeemed to belong to the claſs of *cucurbitinæ*, had all its rings open in the middle, the rings being only connected together by ſmall and irregular collateral bands. M. *Marc*, of Berlin, gives an obſervation of a patient who voided a worm one hundred ells in length, and of which the head was cleft as deſcribed above.

In the caſe of the woman here detailed, Madame *Nouffler*'s remedy was preſcribed; conſiſting of the male fern-root, followed by briſk purgatives. At firſt ſome fragments of a flat-worm were brought away, and afterwards a large quantity of gelatinous matters, ſemi-tranſparent, flattened, of different lengths, and about three lines in breadth. Several of theſe bodies, on being put into water, ſeemed to have a kind of organization. On the thickeſt ſide, and about a line diſtance from the edge, a bluiſh line was perceptible traverſing its length, and in certain points the knots or diviſions were ſufficiently obſervable. That thoſe mucous ſubſtances were not the reſult of a decompoſition of the tænia is probable, the author thinks, for theſe reaſons: 1. the tænia is not readily reduced to a mucous conſiſtence; 2. ſuch an effect has not been commonly obſerved to follow the exhibition of M. *Nouffler*'s remedy; 3. if this hypotheſis were well founded, we ſhould rather expect to find irregular and half diſſolved maſſes, than bodies organized with much ſymmetry. The opinion of the author is, that they were fragments of the worm regenerating itſelf, and in the very act of reproduction.

The author cites a ſecond caſe, where, after the exhibition of the above remedy, organized mucous maſſes were in like manner expelled, in which the ſketch or outline of the tænia might be perceived. Although in each of the caſes a perfect cure took place, the moſt ſcrupulous examination never diſcovered the tapering head of the animal.

§ 76. *Caſe*

§ 76. *Caſe of a Woman who had for many Years a fiſtulous Ulcer of the Stomach. By* M. Circaud, *Student in Medicine. (Ibid.)*

The patient, a woman forty-ſix years of age, fell, and ſtruck the belly with violence againſt the projecting corner of a large ſtone. For ſeventeen years afterwards ſhe complained conſtantly of a feeling of weight at the epigaſtric region: in other reſpects the functions were well performed. At this period ſhe was attacked with vomitings, which were followed by a rupture of the parietes of the abdomen, and of a portion of the ſtomach itſelf on the left ſide; hence reſulted a fiſtulous opening, ſufficiently large to admit the paſſage of a quill. At firſt, the liquid parts only of her food paſſed during the time of eating; but the opening became gradually larger, ſo as to exceed an inch in diameter, and permitted the paſſage of both ſolid and liquid aliments.

An adheſion of the ſtomach to the abdominal muſcles had taken place: the inner ſurface and borders of the fiſtulous opening were of a fine vermilion colour, and the folds formed by the villous membrane of the ſtomach were perceptible, and which ſeemed to ſecrete a whitiſh frothy fluid, reſembling the ſaliva, Was this, the author aſks, the gaſtric juice?

When this woman is about to make a meal, ſhe places a compreſs over the fiſtula, and eats with a good appetite. After ſhe has eaten three or four hours, more or leſs, according as the pains ſhe feels permit, ſhe takes off the compreſs, and the aliment iſſues out by its own gravity, or by the contraction of the ſtomach itſelf. The food that thus comes away has a ſour ſcent, and appears half digeſted, like that of a drunkard who vomits an hour or two after a debauch. She then drinks a cupful of broth, for the purpoſe, as ſhe expreſſes it, of cleanſing her ſtomach; after which ſhe again applies the compreſs, and falls to eating again, with great greedineſs. She has an evacuation by ſtool only once in three or four days, and diſcharges but a ſmall quantity of natural-looking fœces.

This woman is at preſent in the *Hoſpice de l'Unite* at Paris *(ci-devant la Charité)*, where it is propoſed, by the moſt eminent chemiſts and phyſiologiſts, to make experiments on the gaſtric juice; a purpoſe, for which an admirable opportunity here preſents itſelf.

---

§ 77. *On the Nature and Formation of the Earths. By* M. Lampadius, *Profeſſor of Chemiſtry at Freyberg.*

It has not been yet demonſtrated that the earths extracted from certain organic bodies were mechanically introduced into thoſe bodies during their growth; on the contrary, it is probable that they were formed therein by the combination of certain elementary principles. *Vauquelin* has demonſtrated the formation of calcareous earth in fowls; and the following experiment of M. *Lampadius* appears

appears to him to prove, in like manner, the formation of ſiliceous earth in the *ſtalks* of rye. I formed, ſays M. *L.*, in a garden, ſix trenches or compartments, each four feet ſquare and one foot deep. Each of theſe was filled with one of the ſimple earths, in as pure a ſtate as it could be procured, mixed with eight pounds weight of cow-dung. The earths employed in the experiment were *ſilex*, *alumine*, *lime*, *magneſia*, and *common garden mould*. Rye was ſown in each of theſe ſquares, and, when grown and ripened, ten pounds of the ſtraw from each were burned ſeparately, and the aſhes expoſed for ſome time to a violent red *heat*. The aſhes of all of them, on analyſis, gave a ſimilar reſult, as follows.

Silex	700
Carbonate of potaſh	160
Alumine	20
Magneſia	70
Oxyd of Iron	42
Loſs	8
	1000

Hence M. *L.* concludes, that ſilex is an eſſential part of the ſtalks of rye, and that the nature and quantity of the various earths which are formed during the vegetation of plants have no dependance on the nature of the ſoil in which they grow.

The author remarked that when ſtrontian, barytes, and lime, were calcined along with charcoal, and the fire excited by a blaſt of oxygen gas, thoſe earths were attracted by the charcoal, penetrated its ſubſtance, and burned along with it. In this way it was found, that five grains of ſtrontian diſappeared in the ſpace of five minutes, ten grains of barytes in ten minutes, and five grains of lime in fifteen minutes. Theſe obſervations led him to make ſome experiments on the oxydation and de-oxydation of thoſe earths. He expoſed them, under different degrees of temperature, to the action of manganeſe, oxyd of mercury, and nitrate of potaſh; but they underwent no change in conſequence.

Wiſhing to purſue his experiments on the decompoſition of the earths, M. *Lampadius* took ſixty grains of pure ſtrontian, and one hundred and twenty grains of charcoal. This mixture was put into a gun-barrel, at the extremity of which was affixed a bent glaſs tube that opened under a mercurial apparatus. The gun-barrel was then placed in a furnace, and the fire excited by a ſtream of oxygen gas. In a ſhort time, a diſengagement of gas took place, when the operation was interrupted by the bending of the barrel, in conſequence of the exceſſive heat. Twenty-four cubic inches of air were in this way obtained, thirteen of which were carbonic acid; the eleven remaining parts being burnt with three inches of oxygen gas, eight cubic inches of azote remained; the reſidue in the tube formed a maſs, the grains of which were agglutinated together, but without alteration. On burning this reſidue in a porcelain crucible, thirty-two grains

grains of pure ſtrontian, ſlightly tinged with yellow by the oxyd of iron, were obtained.

From this imperfect but frequently repeated experiment the author ſcarcely dares hazard the following conjecture, viz. that ſtrontian (and probably the fixed alkalies, barytes and lime) is a compound of azote, hydrogene, and oxygene: at a high temperature it gives out its oxygene in part to the carbone, and then the hydrogene and oxygene are diſengaged in the form of gas.

A conſiderable number of experiments lead him to ſuppoſe, 1. that alumine abſorbs a conſiderable quantity of oxygene (as before proved by *Humboldt)*; 2. that this earth, thus ſuper-oxygenated, is extremely difficult of ſolution in the acids, a circumſtance neceſſary to be attended to in the analyſis of minerals, and that it does not diſſolve till deprived of its oxygene by an alkali; 2. that it is not yet demonſtratively proved, though not improbable, that alumine and ſilex are eſſentially the ſame ſubſtance.

The experiments above alluded to were the following. 1. Sixty grains of pure alumine put into a bottle with two drachms of water and eighty-three cubic inches of oxygene gas, were left at reſt for ſeven months: at this time, on opening the bottle, the atmoſpheric air ruſhed in with violence. The earth which had become ſuper-oxygenated was found incapable of being diſſolved, till it had been treated by an alkali, and precipitated by the acetic acid.

2. One ounce of porcelain earth, newly drawn from the quarry, was coarſely pounded and placed under a glaſs bell. During the firſt fifteen days it abſorbed fifteen cubic inches of oxygene gas, and in fifteen days more, thirteen inches additional. In about ninety days, when all abſorption appeared to have ceaſed, it had acquired ſixty-eight inches of gas. Although alumine conſtitutes the principal part of porcelain earth, yet it was not poſſible in this inſtance to effect its diſſolution, till it had been treated with a cauſtic alkali.

---

§ 78. *Neceſſity of a Stimulus for the Developement of the Faculties of Senſe.*

A young human being has been of late diſcovered in the foreſt of *Canni* in France, which has greatly excited the attention of the curious, and which promiſes to illuſtrate, in ſome degree, the nature of the animal faculties. A report has been made to the *National Inſtitute* on the ſubject, which will be read with no ſmall degree of intereſt. When firſt brought to Paris, he appeared nearly inſenſible, ſeeming ſcarcely either to hear or ſee: he gave no ſigns of attention to external objects, and ſeemed

to

to have no ſort of active principle. From theſe circumſtances, it was natural to conclude him an idiot; and what lent a ſtrong confirmation to this opinion, was, that M. *Pinel*, a phyſician who has acquired a high degree of reputation by his ſuccesſful treatment of perſons of diſordered intellects, having accurately examined all the circumſtances connected with the phyſical and moral ſtate of this boy, and having compared them with thoſe of the idiots confined at the hoſpital of *la Salpetriere*, found ſuch a perfect coincidence between them, that he thought himſelf juſtified in delaring this creature a natural idiot.

But a few philoſophers oppoſed themſelves to a deciſion ſo precipitate and ſevere. They thought it poſſible, that the ſolitary and brutal life of this ſavage, as he was called, might have produced a ſort of habitual, the appearances of which might be ſimilar to thoſe of natural, idiotiſm: and they held it extremely unjuſt to condemn the creature for ever; and unwiſe to leave ſo extraordinary a phenomenon totally unexplained: at the ſame time, they ſuggeſted the means which they conceived would be moſt effectual to rouſe his faculties and unfold his underſtanding; if, in reality, he poſſeſſed any. *Locke* and *Condillac* had already given the idea of thoſe means. Previous to any attempt to produce connexion of ideas, the ideas themſelves ſhould be created; in order to create them, the attention ſhould be fixed; and, to fix the attention, the wants and neceſſities of the perſon muſt be intereſted. They did not wiſh to teach him the uſe of ſigns before he could have acquired the notions which thoſe ſigns are intended to expreſs; they wiſhed to work on his ſenſibility; to direct it to its proper objects; and, by the formation of new habits, to counteract thoſe depraved ones, by which he had hitherto been enſlaved. They ſaw that a long time would be required to excite in him attention to a world in which he was a ſtranger, and regard for objects in which he had been, and was yet, totally unintereſted: but they reſolved to apply themſelves with induſtry, and to await the effect with patience.

The boy was committed to the care of C. *Itard*, phyſician of the *Inſtitution for Deaf and Dumb*, in order that, by the combination of phyſical and moral remedies, the double incapacities under which he laboured might be more effectually removed. C. *Itard*'s exertions have already been crowned with a degree of ſucceſs which is almoſt prodigious: he proceeded nearly in the following order.

The ſenſe of feeling ſeemed to be entirely paralyzed in the child: he ſhewed no ſenſibility either to heat or cold; his ſmell and taſte were plunged in a ſimilar ſleep. A repetition of warm baths, however, ſoon unfolded his nervous ſenſibility: in a little time after, his feeling acquired a conſiderable degree of delicacy; he became nice in the choice of his food; he made uſe of a ſelection and cleanlineſs in it, to which he had been before a ſtranger.

The eye of this child was wild and wandering; he ſaw, without doubt; but he never dwelt on the object. The loudeſt noiſes appeared ſcarcely

ſcarcely to ſtrike his ear; a piſtol-ſhot would not make him turn his head: ſuperficial obſervers would have concluded from hence that he was deaf; but C. *Ytard* was aware that, even when the ſenſe is perfect, no perception is produced unleſs the mind is attentive; and he was not aſtoniſhed that the violence of the ſound made no impreſſion on a being whom it could not intereſt. He found a new proof of the juſtneſs of his obſervation, in the attention which his pupil beſtowed on the ſmalleſt ſound which could intereſt him, ſuch as the cracking of a nut, or the turning of a key.

In the mean time, new habits were formed in the boy; a number of new neceſſities aroſe; food, dreſs, reſt, and walking out, were ſo many new means of augmenting his dependance. Finding himſelf under the neceſſity of availing himſelf of thoſe about him, he has begun to feel the force of moral affections, and has conceived a particular attachment to his governeſs. His ideas have been multiplied and connected; ſome efforts have been made to amuſe him, and it is contrived to unite amuſement with inſtruction. He has been exerciſed at compariſons; they have accuſtomed him to compare objects with their images, and in theſe compariſons he has only been conſtrained to uſe the united powers of judgment and memory. C. *Ytard* thought this a favourable moment to teach him our written characters, and he made uſe of the method employed in the inſtruction of the deaf and dumb: he wrote the name of the object on the image, and then, by effacing the image, he hoped that the name would remain connected with the remembrance of the object: but this method proved unſucceſsful. Then other means were uſed, which are detailed in C. *Ytard*'s publication, the effect of which was as happy as could be hoped. The boy now diſtinguiſhes the characters of the alphabet, and places them in their order: he pronounces the words *lait*, *ſoupé*, in the common tone, and then brings the proper letters, and forms thoſe words. In this manner, he every day acquires a new word; he already begins to emerge from his ignorance, and has entered on the territory of reaſon: he is in poſſeſſion of ſome of our terms of ſpeech, and will ſoon be enabled to give us ſome information reſpecting his early condition; a ſubject which, of all others, muſt be moſt intereſting to curioſity.

It ſhould be obſerved, that he finds great difficulty in the formation of articulate ſounds: from the effect of long diſuſe of his organs of ſpeech, there are only a few words that he can pronounce perfectly; but it is hoped that the ſame perſeverance, which conquered the firſt difficulties that ſtood in his way, will alſo help him to overcome the others.

---

§ 79. "*Nothing new under the Sun.*"

There is more of truth in this maxim of the Sage of antiquity, than the vanity of modern times is perhaps willing to allow. A better acquaint-ance

ance with antient writers would juſtify us in plucking many a laurel from the brows of modern *diſcoverers.* The French philoſopher *Mercier* has quoted a work, publiſhed twenty-ſeven years ago, which contains, it is ſaid, the principles of Galvaniſm. Twelve years before, the celebrated *Sulzer* diſcovered this principle, and obtained the ſame reſult. "If you join," ſays he, "two pieces of metal, one of lead, and the other of ſilver, in ſuch a manner that their edges form one plane, and if they be placed upon the tongue, a taſte of the vitriol of iron will be felt, while each piece ſeparately leaves no trace of taſte."—*Smith*'s *poſthumous works*, part ii. p. 308.

It has lately been ſaid, too, that the *Cow-pox* attracted notice ſome centuries ago. *Mavius*, the firſt Biſhop of *Lauſanne*, ſpeaking of the ſmall-pox, *variola*, in the annals of his own time, obſerves, that it principally attacked horned cattle. This was in the year 570; and it does not appear to have attacked mankind till the year afterwards, namely 571. It will be ſingular if the ſame animal which firſt had the diſeaſe ſhould furniſh man with the beſt preventive of this dreadful malady.

---

§ 80. *On the Connexion between Earthquakes, Tempeſts, and Epidemic Diſeaſes; and a Vindication of the Doctrine of Equivocal Generation. By* Noah Webſter, *Jun. Eſq.*

The following Paper, extracted from the *Medical Repoſitory* of *New York*, forms a proper appendix to Mr. *Webſter*'s former Eſſay on the ſubject, and which was noticed at ſome length in our Review. It is addreſſed to Dr. *Mitchill*, and dated, *New Haven*, *March* 2, 1801.

'In the courſe of my ſtudies I ſometimes fall upon relations of unuſual facts, which it may, poſſibly, be uſeful to place in your highly valuable Repoſitory. The ſcraps that I ſend you are at your ſervice; only do not inſert them to oblige me, but let their publication depend on your own opinion of their value.

'In my Hiſtory of Peſtilence I have ſuggeſted the connexion between electricity and earthquakes, and violent tempeſts. The following is a ſingular concurrence of facts to confirm the opinion.

'On the 18th of October, 1769, four minutes before twelve o'clock at noon, a ſmart ſhock of an earthquake was felt at Kennebec, which laſted about a minute, and was inſtantly f llowed by a hurricane of wind from N. W. by W. This wind continued all day. The next day, at the ſame minute of the day, another ſhock was experienced of ſtill greater ſeverity.---*Connect. Journal*, Nov. 10, 1769.

'It

'It is a common remark, that thunder-ſtorms are leſs frequent and ſevere, within a few years paſt, than formerly: I think the remark well founded. The frequent and tremendous ſtorms of that ſort, from 1767 to 1773, are ſtill freſh in my mind. One of them is worth notice, on account of the effects upon the human body. On the 2d of September, 1771, a fearful ſtorm of thunder, lightning, and rain, happened at Fairfield, in Connecticut: it laſted two or three hours; the heavens were almoſt continually involved in a ſheet of livid flame; the earth trembled with the thunder; and pewter was ſhaken from ſhelves. This ſtorm left people with a dull, heavy pain and ſtupor in the head.

'In connexion with this fact, it may be remarked, that the caſes of apoplexy and palſy in 1771 and 1772 far exceeded what are uſual. I have before me a liſt of caſes that occurred within a few months in this city and neighbourhood, equal to what is uſual in the ſame number of years.

'All the ordinary operations of the elements were upon a great ſcale. The inundation in Virginia, in May 1771, ſwept away about five hundred buildings on James River only. The legiſlature granted thirty thouſand pounds to the ſufferers. Such occurrences are rare.

'The memorable tempeſt of September 8, 1769, which levelled hundreds of houſes, has probably not been equalled ſince; certainly not for many years paſt. Poſſibly the great ſtorm at Newfoundland, September 2, 1775, when the ſea ſuddenly roſe twenty or thirty feet, might have been equally fatal. In 1768 and 1769, Marblehead alone loſt twenty-three ſail of ſhipping in violent gales, with one hundred and ſixty ſeamen, beſides many who were waſhed overboard from veſſels that eſcaped deſtruction. By thoſe loſſes ſeventy women were made widows, and one hundred and fifty-five children loſt their fathers. Such periods, fortunately, are not common.

'The diſeaſes of that period were angina maligna, catarrh, and eſpecially meaſles, which, probably, invaded the whole world. I have found the latter diſeaſe in the Weſt Indies, at the Cape of Good Hope, in Europe, and all parts of North America.

'The following caſe of yellow fever occurred in New York, in 1771: Jacobus Rooſevelt, on the remarkably hot Tueſday, Auguſt 6, drank too largely of cold water; was ſeized with pains in the ſtomach and bones, died the next day, and turned as "yellow as in a jaundice."

'It is the common opinion, that mephitic air in wells and vaults is generated ſlowly, and is to be aſcribed to a ſtagnation of the air in covered places. I have ventured, in the Appendix to my Hiſtory, vol. ii. p. 334, to call in queſtion this opinion, and ſuggeſt, that the deleterious gas is produced ſuddenly.

'The

‘ The following caſes are in proof of that opinion. In July 1770, a man in Boſton entered a ciſtern to cleanſe it, and inſtantly fell dead. The ciſtern had been entered a few days before without inconvenience.

‘ In Auguſt 1774, a boy went into a well, of about twelve feet deep, in Danbury, in this State, to get a veſſel that had fallen in. He inſtantly fell motionleſs, and died. This well *was open, and uſed.* On examination it was found that all the wells in the neighbourhood were filled with the noxious vapour. As theſe wells were open, and as the inhabitants generally uſe a bucket to draw water, we have full evidence that the wells muſt have been filled ſuddenly, or in a ſhort time, and nearly at the ſame time; for the action of the bucket ſpeedily diſſipates, and mixes the vapour with the air. I do not know whether the mortal dyſentery at Danbury, the next ſummer, of which I have given an account in my Hiſtory, under the year 1775, can be aſcribed to the gas expelled at that time; but it deſerves remark.

‘ Theſe facts, with thoſe which I have related in the Addenda to my Hiſtory, ſeem to eſtabliſh the point, that the carbonic acid gas, called damp, or mephitic vapour, is not generated ſlowly by a chemical proceſs; and that ſtagnation in a covered well is not at all eſſential to its exiſtence. The old theory, then, muſt yield to facts, and I wiſh you to turn your thoughts to the ſubject. I am more and more perſuaded of the truth of my conjectures, that ſome internal force or demand *ab extra,* at times, expels from the earth ſome of the materials of our atmoſphere; ſometimes with a trembling of the earth, and ſometimes without any ſenſible concuſſion; and that the noxious vapours, ſubſiding into low places, or combined with the aërial ſubſtances evolved from animals and vegetables, conſtitute the inviſible, but deadly, agents of peſtilential diſeaſes.

‘ The autumn of 1773 was ſo mild, that green peaſe were gathered at Norwich, in Connecticut, about the 1ſt of November; and freſh ripe ſtrawberries, a ſecond growth, were gathered at Fairfield.

‘ On the 1ſt and 2d of October, 1770, ſnow fell to the depth of ſix inches in Berkſhire county, Maſſachuſetts, and lay ſeveral days. The green leaves of trees were not affected. This was a rare inſtance of early ſnow. The following fact is equally ſingular. In autumn 1757, a deep ſnow and ſevere cold happened in October; the preciſe day I cannot learn. The froſt was ſo ſevere, that the harbour in this place was cloſed with ice---an event that occurs only in our ſevereſt winter weather. This cold laſted four or five weeks, when the weather became temperate in December, and remained as mild as ſpring during the winter months.

‘ I have often heard of fire balls during tempeſts, but the following fact is more remarkable. On the 12th of Auguſt, 1771, in a perfectly clear day, a blaze of fire entered a room at Cape Elizabeth, in Maine, where a young woman was weaving, burnt one of her arms, and ſet fire to the harneſs and web in the loom. The cries of the woman brought

brought relief, and the fire was happily extinguiſhed. Electrical phenomena were unuſually numerous in that and the next year; but I leave philoſophers to judge of the connexion and the cauſes.

'In our old hiſtories we read of ſprings and rivers of blood, which the diſtempered imaginations of men converted into omens dire. A ſimilar phenomenon happened, about two years ago, at Salem or Fredericksburgh, but the account of it is miſlaid. The following is before me. On the 3d of April, 1769, a ſmall ſtream guſhed from the earth at New Canaan (Columbia county), exhibiting the appearance of blood. The water in a veſſel was of a deep carnation. This diſcharge was of an hour's continuance. The phenomenon was repeated for ſeveral mornings near the ſame place, and, when dry, the earth had an offenſive ſmell. My motive for relating this account is, to evince the impropriety of charging Livy, and other authors of credit, with relating fables.

'But I have a more ſerious ſubject of diſcuſſion. In the review of my Hiſtory of Peſtilence it is expreſſed, as a matter of regret, that I had eſpouſed the exploded doctrine of equivocal generation. I confeſs the rejection of the doctrine, as I underſtand it, is a ſtrong proof of the pride of modern philoſophers, and their willingneſs to embrace any current theory of the day, without reaſon, and contrary to moſt obvious facts. Equivocal generation, in the true underſtanding of the phraſe, denotes doubtful or uncertain origin. That modern diſcoveries have explained ſome things which were once uncertain, is undeniable; but the generation of many animals is yet as uncertain as it was in the days of Ariſtotle. Juſt as far as facts will authoriſe us to go, ſo far we tread on ſure ground:—all beyond is hypotheſis; and we have no right to adopt or reject general doctrines on hypotheſis. Will any man venture to aſſert that the worms found in the human ſtomach are not animals? or that they are generated by a parent worm of the ſame ſpecies? or that a worm of twenty inches in length, found in a human liver, had a parent of the ſame kind, when, perhaps, a ſimilar animal never before exiſted? In 1773, the patients in a very malignant dyſentery in Eaſt Haven generated worms in ſuch numbers, as to be ſuffocated by them. Where or what was the parent animal, that, on that particular occaſion, depoſited its young, or the germs of innumerable animals, where none had appeared before? It is poſſible, in ſuch a caſe, that each worm may have, for its origin, a germ of animal life in an undiſcovered inſect; yet the phenomena warrant us in determining that they could not proceed from a parent of the ſame ſpecies, but from ſome unknown germ or principle; and this is preciſely equivocal generation.

'Again; let a particular plant be tranſported to a diſtant country, where nothing of the ſort ever grew: on that plant will be found inſects which were never before in that country. Let a ſingle tobacco-ſeed be conveyed to an iſland a thouſand leagues from any ſpot where tobacco has ever been propagated, and the plant from that ſeed will contain a worm never before exiſting on that iſland. Perhaps an egg may be depoſited

poſited by an animal, and perhaps ſuch a germ of animal life may be eſſential to the exiſtence of that worm; but the worm ſhall be a new ſpecies in that iſland, and one that could not have exiſted there without that particular plant.

'The generation of the eel is a point that has puzzled all the inveſtigators of Nature. Some philoſophers have conjectured that they have diſcovered the marks of ſex in that animal; but it yet remains doubtful. It is acknowledged on all hands, that, let a pond of water be made in any ſuitable place, remote from other water, and it will, in a reaſonable time, be furniſhed with eels. It is agreed that theſe animals could not travel thither by land, and, therefore, men reſort to *hypotheſis* to account for their origin, pretending that they muſt be tranſported by aquatic birds. —*Encyclop. art. Muræna.*

'A remarkable inſtance of this kind of ſolution of difficulties we have in the Hiſtory of Carolina, vol. ii. p. 303. Lond. 1779. I will cite the whole paſſage.---" In every plantation great care is taken in making dams to preſerve water for overflowing the rice-fields in ſummer, without which they will yield no crops. In a few years after this pond is made, the planters find it ſtocked with a variety of fiſhes; but in what manner they breed, or whence they come, they cannot tell, and, therefore, leave that matter to philoſophical inquirers. Some think that the ſpawn of fiſh is exhaled from the large lakes of freſh water on the continent, and, being brought in thunder-clouds, falls with the drops of rain into theſe reſervoirs of water. Others imagine that it muſt have remained every where among the ſand ſince the time the ſea left theſe maritime parts of the continent. Others are of opinion that young fiſh are brought by water-fowls, which are very numerous, from one pond to another; but, be that as it will, the effect is viſible and notorious all over the country." Theſe are curious modes of propagating fiſh. The latter reſembles the method of ſpreading epidemic diſeaſes---the water-fowls being the fomes, which, after ſwallowing and digeſting the fiſh, fly away to a diſtance, and communicate the infection to an empty pond. I have heard of eels ſliding through fowls undigeſted; but this is the firſt time that I ever heard of ſuch flimſy ſuppoſitions to help out a theory of propagating other kinds of fiſh.

'Indeed, Sir, I think it more becoming the limited knowledge of man to acknowledge his ignorance, than to be poſitive on ſuch doubtful ſubjects. It is far from being impoſſible that the principles of animal and vegetable life may be radically the ſame-- deſcending from man to the minuteſt germ of life in grades almoſt imperceptible in the larger ſpecies, and in the ſmaller ſpecies wholly beyond the reach of optics; and theſe elementary principles may originate life, in the form of vegetables or animals, according to the nidus. But hypotheſis muſt not be the baſis of ſyſtem: and when the mode of generation is doubtful, I ſet it down as *equivocal*, which is only another term for human ignorance.

'It

'It is well known that vegetable ſubſtances have been found growing out of the fleſh of living animals; not from ſeed, moſt certainly, for the vegetables are of ſpecies unknown, and *ſui generis.*

'The minuteſt part of a polypus, detached from the animal, produces a new and perfect animal—not by any uſual mode of generation: and the whole claſs of zoophytes confounds all philoſophical reaſoning on this ſubject.

'As to the atheiſtical tendency of the doctrine, I am quite unconcerned on that ſcore. There is a faſhion in opinions as well as in dreſs: each ſyſtem muſt have its day. Not many years ago Boerhaave was the *omnis homo* of the faculty. He ſoon yielded his place to Cullen: Brown triumphed over Cullen: and now Sydenham, who had been caſt away as rubbiſh, has reaſſumed his ſtation as the father of a ſyſtem, with his occult qualities. Similar is the rotation of opinions in chemiſtry. Opinions even become national---and we ſee Lavoiſier arranged againſt Prieſtley, as formerly Caſſini againſt Newton.

'With reſpect to the theological conſequences of the doubtful generation of plants and animals, I have one remark to make---That the modern diſtinction between primary and ſecondary cauſes ſeems to be carried too far; and, if I miſtake not, has been the means of ſupporting, if not of originating, the uſual arguments in favour of materialiſm. That matter can be endowed with laws, which ſhall operate uniformly and perpetually, independent of divine agency, may be poſſible, but appears to me unphiloſophical. I can have no belief in permanency of duration in any being but God, and the operations of his power. The opinion that natural effects proceed from laws impreſſed on matter, without any direct exertion of divine power---and that ſupernatural effects are produced by the immediate agency of the Supreme Being---appears to me at leaſt unfounded, and even unſcriptural. The ſcripture generally aſcribes every event directly to the firſt cauſe. It was God who hardened Pharaoh's heart, and who cauſed it to rain, as well as God who created the world, and arreſted the ſun in his courſe. This view of the queſtion is not only more pious, but more philoſophical; for I no more comprehend the growth and expanſion of the roſe in my garden, than the creation of the earth, or the reſurrection of Lazarus. The reſult of my philoſophy is to reſolve every event and operation in the univerſe into the direct exertion of omnipotence. And I cannot but think that the modern doctrine of nature and natural laws, which ſeems to exclude the divine agency from moſt of the operations in the univerſe, has furniſhed the moſt tenable ground occupied by the materialiſts. This opinion of mine involves in it the idea, that God is the author of evil; but this, in my mind, is no objection to it; for what we call evil is ſuch only to our limited views.

'But I am proceeding beyond my depth: it is beſt to put an end to this deſultory letter. I have little leiſure for philoſophical reſearches---

being engaged in compiling a syſtem of principles for the education of our youth, on a plan new and more comprehenſive than has yet appeared. I have an inſuperable diſlike to metaphyſical ſtudies, believing in the utility of plain matter of fact only.

'I am, &c.'

The arguments of Mr. *Webſter* in ſupport of the exploded doctrine of ſpontaneous or equivocal generation appear to us of no great weight. Indeed he does not meet the queſtion fairly: his referring to ſome unknown germ or principle, is granting what his opponents will readily accede to, that we are in many inſtances ignorant of the origin of animal exiſtence, from the obſcurity of the ſubject and imperfection of our organs; but all that we do ſee and know is againſt the doctrine, and we naturally infer the ſame of the minuter parts of Nature. The following remarks on the ſubject are by Dr. *Prieſtley*, and are ſubjoined to Mr. *Webſter*'s paper in the ſame journal.

'I cannot forbear expreſſing my ſurpriſe that a perſon who writes ſo judiciouſly as Mr. Webſter does, with reſpect to the proper object of his work, ſhould advance opinions ſo wild and unphiloſophical as ſome that appear towards the cloſe of it, and eſpecially that he ſhould be an advocate for what I thought to have been the long exploded doctrine of *equivocal generation*---believing that various animals, the ſtructure of whoſe bodies is as exquiſite as that of man, all bearing marks of infinite wiſdom, ſhould ariſe ſpontaneouſly from the natural elements of earth, air, water, and fire, which are void of all intelligence.

'Among ſuch animals he enumerates, beſides inſects in general, and ſome of them of *unuſual forms*, clouds of flies, black worms an inch and a half in length, which devoured graſs and corn, generated, he ſays, ſuddenly, and covering two or three hundred miles of country, and the Heſſian fly. He ſeems, too, to believe that the extraordinary number of frogs, toads, and even ſhad, which precede ſeaſons of peſtilence, have no other origin than that peſtilential air producing an uncommon degree of excitement, which he aſcribes to electricity---and that they are again deſtroyed by a ſudden change in the elements which produced them.

'After ſaying that "new plants frequently ſpring up, generated by new powers in the elements, occaſioned by different combinations of heat, moiſture, and air, without any previous ſeed—and that the elements of air, water, and fire, are fitted to produce animals of kinds proper to ſubſiſt on them"---he expreſſes his wonder that "men ſhould ſtill be found to deny the doctrine of equivocal generation."

'But if any one of theſe plants or animals, even the ſmalleſt, and to appearance the moſt inſignificant, could be formed without intelligence, from unconſcious elements---oaks, elms, and cedars---horſes, elephants, and

and men, might have originally come into exiſtence in the ſame way, and the whole univerſe have had no intelligent author. And yet Mr. Webſter appears not only to be a believer in a ſupreme intelligent author of nature, but in revelation too. I am confounded when I reflect on ſuch inconſiſtencies, and that they ſhould be found in a work which, for a laborious collection of facts, the accurate ſtatement of them, and juſt reaſoning from them, is truly admirable.

'Had Mr. Webſter maintained that any being, of ſufficient power and intelligence, had interpoſed on theſe occaſions, and produced new plants and animals, or an extraordinary number of old ones, and removed them when they were no longer wanted, there would not have been any thing impoſſible, but only highly improbable, in the ſuppoſition—miracles being ſuppoſed to be wrought without any juſt occaſion for them. But to aſcribe the production of living beings, bearing marks of infinite ſkill, to elements without intelligence, and even without life, is not placing the world upon the elephant, or the elephant upon the tortoiſe, but upon nothing at all.'

---

§ 81. *On the pretended Decompoſition of the Fixed Alkalies.*

In the laſt volume of the Memoirs of the *National Inſtitute,* we find the long expected detail of the experiments of *Guyton* and *Deſormes* on the pretended decompoſition of the fixed alkalies.

Theſe experiments chiefly relate to the action of charcoal upon fuſed cauſtic potaſh and ſoda. During this action, it is ſaid that inflammable gas is formed at the ſame time that the alkali becomes impregnated with carbonic acid; and lime appears to be produced in the caſe of potaſh, and magneſia in that of ſoda.

It is to be regretted, that the detail of theſe experiments is not more minute; and that the mode of purifying the ſubſtances employed is not deſcribed.—Every chemiſt knows how difficult it is to ſeparate the laſt portions of lime from potaſh and ſoda, in proceſſes in which that ſubſtance is uſed to render them cauſtic.---The pureſt charcoal of wood contains, not only lime, but generally different neutral ſalts; and as even fuſed potaſh and ſoda always contain water, it is eaſy to account for the inflammable gas and carbonic acid produced, from the decompoſition of this ſubſtance by the charcoal.

A Tranſlation into Engliſh of *Cuvier*'s Treatiſe on Comparative Anatomy is in great forwardneſs: it is executing at Paris under Cuvier's directions, by an Engliſh phyſician, qualified to do juſtice to the undertaking. A number of notes by Cuvier himſelf will be added to the two

 firſt

firſt volumes, which are not in the French edition. Theſe volumes will be ſpeedily publiſhed at Edinburgh, and the remaining volumes will appear as early as the original.

Dr. Garnett's Lectures.

On Tueſday, January 19th, at eight o'clock in the evening, Dr. Garnett will commence a Courſe of Lectures on *Chemiſtry*, comprehending all the modern diſcoveries in that ſcience, with its application to the different arts and manufactures, particularly pharmacy, medicine and agriculture. The Courſe will conſiſt of about forty lectures, two of which will be delivered every week; viz. on Tueſday and Thurſday, at eight o'clock in the evening. A ſhort Courſe of *Mineralogy* will be introduced in the forenoon, which thoſe who ſubſcribe to the Chemical Courſe will be allowed to attend.

On Wedneſday, January 20th, at eight o'clock in the evening, he will commence a Courſe of Lectures on *Zoonomia*, or the Laws of Animal Life; in which a popular view will be given of the animal economy, and the laws by which its different functions are regulated, with the methods of preventing and curing diſeaſes. The object of the Lecturer will be, to render this courſe intereſting not only to ſtudents of medicine, but to all who think the ſtudy of the human frame a ſubject worthy their inquiry.

This Courſe will conſiſt of fifteen lectures, one of which will be delivered every Wedneſday evening, at eight o'clock.

For particulars, application may be made to Dr. Garnett, No. 51, Great Marlborough Street.

No. XLVII.

THE MEDICAL AND CHIRURGICAL REVIEW.

MARCH, 1802.

Art. LXII. *Philoſophical Tranſactions of the Royal Society of London, for the Year* 1801. Part II. 4to. about 200 pages, price 1*l* 1*s*. London, 1801. Elmsley.

Art. 12. 'A Hiſtorical and Anatomical Deſcription of a doubtful Amphibious Animal of Germany, called by *Laurenti*, Proteus Anguinus. By *Charles Shcreibers*, M. D. of Vienna.' The ſingular and ambiguous animal here deſcribed, lives in a ſmall ake in Carniola, called *Sitticher See*. Its reſemblance o the larvæ of ſome lizards led Linneus to ſuppoſe t an imperfect animal. From the minute account of he ſtructure of this animal, however, here given, it ap- ears to be a perfect animal, and nearly allied to the amous *Siren Lacertina* of Linneus, with which it grees in the moſt ſtriking particulars; viz. in having ills and lungs, and therefore cauſes the ſame doubts bout its being a perfect animal. The principal dif- erence between them (beſides the ſiren having only wo feet) conſiſts in the head and lungs, which are dif- erently formed in the two animals. A reference to ne figures would be neceſſary, in order to the perfect nderſtanding of the ſubject.

 13 'Obſer-

13. ‘Obſervations tending to inveſtigate the Nature of the Sun, in Order to find the Cauſes or Symptoms of its variable Emiſſion of Light and Heat; with Remarks on the Uſe that may poſſibly be drawn from ſolar Obſervations. By *William Herſchell*, L. L. D. &c.’ It is pretty generally known that the learned and ingenious author of theſe obſervations looks upon the ſun as a moſt magnificent habitable globe. Later obſervations, he thinks, have not only confirmed the arguments formerly advanced by him on this head, but encourage us to go a conſiderable ſtep farther, in the inveſtigation of the phyſical and planetary conſtruction of this luminary. The influence of this eminent body on the globe we inhabit is ſo great, and ſo widely diffuſed, that it becomes a duty for us to ſtudy the operations which are carried on upon the ſolar ſurface. Since light and heat are ſo eſſential to our well-being, it muſt certainly be right for us to look into the ſource from whence they are derived, in order to ſee whether ſome material advantage may not be drawn from a thorough acquaintance with the cauſes from which they originate.

With this view, the author has attended to the phenomena which uſually appear on the the ſun's ſurface, and the improvements introduced into the teleſcope have enabled him to make a great number of obſervations with additional facility. Inſtead of the figurative terms formerly uſed of *ſpots*, *nuclei*, *penumbræ*, &c. he has adopted thoſe of *openings*, *ſhallows*, *ridges*, *nodules*, *corrugations*, *indentations*, and *pores*. He ſuppoſes the body of the ſun to be ſurrounded by an atmoſphere of conſiderable denſity, and that in this float two regions of ſolar clouds; the lower whereof, or that which is next to the ſun, is opaque, and probably not unlike thoſe of our planet; whilſt the higher ſtratum of clouds is of a luminous or phoſphoric nature, and from which our light and heat are derived. The appearances denominated *ſpots*, *nuclei*, &c.

conſiſt

consist of openings and irregularities in the luminous clouds of the solar atmosphere, which irregularities must of course affect the quantity of light and heat transmitted to our planet; and hence there may be a connection between our seasons and the appearance the sun presents on its surface.

'If this account of the solar appearance,' the author remarks, 'should be well founded, we shall have no difficulty in ascertaining the actual state of the sun, with regard to its energy in giving light and heat to our globe; and nothing will now remain, but to decide the question which will naturally occur, whether there be actually any considerable difference in the quantity of light and heat emitted from the sun at different times. But, since experience has already convinced us, that our seasons are sometimes very severe, and at other times very mild, it remains only to be considered, whether we should ascribe this difference immediately to a more or less copious emission of the solar beams. Now as we have lately had seasons of deficiency that seem to indicate a want of the vivifying principles of light and heat, and as, from the appearance of last summer, and the present mild winter, there seems to be a change that may be in our favour, it will be proper to have recourse to solar observations, in order to compare the phenomena which indicate the state of the sun, with the seasons of these remarkable times. The following sets, which are selected from my journals, I believe will assist us materially in this inquiry.' Two sets of observations are then subjoined, extracted from his journals, one of which exhibits signs of scarcity of luminous matter in the sun, and the other signs of abundance. These give occasion for the following general remarks.

'From these two last sets of observations, one of which establishes the scarcity of the luminous clouds while the other shews their great abundance, I think we may reasonably conclude, that there must be a

 manifest

manifeſt difference in the emiſſion of light and heat from the ſun. It appears to me, if I may be permitted the metaphor, that our ſun has for ſome time paſt been labouring under an indiſpoſition, from which it is now in a fair way of recovering. An application of the foregoing method, however, even if we were perfectly aſſured of its being well founded, will ſtill remain attended with conſiderable difficulties.

'We ſee how, in that ſimple inſtrument, the barometer, our expectations of rain or fair weather are only to be had by a conſideration of many circumſtances, beſides its actual elevation at the moment of inſpection.

'The tides alſo preſent us with the moſt complicated varieties in their greateſt elevation, as well as in the time when they happen on the coaſt of different parts of the globe. The ſimplicity of their cauſe, the ſolar and lunar attractions, we might have expected, would have precluded every extraordinary and ſeemingly diſcordant reſult.

'In a much higher degree may the influence of more or leſs light and heat from the ſun be liable to produce a great variety in the ſeverity or mildneſs of the ſeaſons of different climates, and under different local circumſtances; yet when many things which are already known to affect the temperature of different countries, and others which future attention may ſtill diſcover, come to be properly combined with the reſults we propoſe to draw from the ſolar obſervations, we may poſſibly find this ſubject leſs intricate than we might apprehend on a firſt view of it.

'If, for inſtance, we ſhould have a warm ſummer in this country, when phenomena obſerved in the ſun indicate the expectation of it, I ſhould by no means conſider it as an unſurmountable objection, if it were ſhewn that in another country the weather had not been ſo favourable. And, if it were generally found that our prognoſtications from ſolar obſervations held good

good in any one given place, I ſhould be ready to ſay that, with proper modifications, they would equally ſucceed in every other ſituation.

'Before we can generalize the influence of a certain cauſe, we ought to confine our experiment to one permanent ſituation, where local circumſtances may be ſuppoſed to act nearly alike at all times, which will remove a number of difficulties.

'To recur to our inſtance of the tides, if we were to examine the phenomena which they offer to our inſpection in any one given place, ſuch as the mouth of the Thames, we ſhould ſoon be convinced of their agreement with the motion of the ſun and moon. A little reflection would eaſily reconcile us to every deviation from regularity, by taking into account the direction and violence of the winds, the ſituation of the coaſt, and other circumſtances. Nor ſhould we doubt the truth of the theory of the tides, though high water at Briſtol, Liverpool, or Hull, ſhould have been very deficient, at a time when, in the place of our experiments, it had happened to be uncommonly abundant.

'Now with regard to the effects of the influence of the ſun, we know already, that in the ſame latitudes the ſeaſons differ widely in temperature; that it is not hotteſt at noon, or coldeſt at midnight; that the ſhorteſt day is neither attended with the ſevereſt froſts, nor the longeſt day with the moſt oppreſſing heats; that the largeſt foreſts, lakes, moraſſes, and ſwamps, affect the temperature one way, and rocky, ſandy, gravelly, and barren ſituations, in a contrary manner; that the ſeaſons of iſlands are conſiderably different from thoſe of large continents, and ſo forth.'

The author then examines the accounts we already have of the appearance and diſappearance of ſolar ſpots, and compares them with the temperature of the reſpective times, as far as hiſtory furniſhes us with records. Theſe, though neceſſarily very imperfect, yet

go a good way in proving the hypothesis in question. As no thermometrical observations that can be relied on are to be obtained, he has recourse to the indirect information to be had, by examining the fertility of the seasons at these periods; and the result of the inquiry is, that from the price of wheat, which is taken as an indication of the greater or less fertility of the earth, and consequently of the sun's influence, it seems probable that some temporary scarcity or defect of vegetation has generally taken place, when the sun has been without those appearances, which are surmised to be symptoms of a copious emission of light and heat. 'In order, however,' he observes, 'to make this an argument in favour of our hypothesis, even if the reality of a defective vegetation of grain were sufficiently established by its enhanced price, it would still be necessary to shew that a deficiency of the solar beams had been the occasion of it. Now, those who are acquainted with agriculture may remark, that wheat is well known to grow in climates much colder than our's; and that a proper distribution of rain and dry weather, with many other circumstances which it will not be necessary to mention, are probably of much greater consequence than the absolute quantity of light and heat derived from the sun. To this I shall only suggest, by way of answer, that those very circumstances of proper alternations of rain, dry weather, winds, or whatever else may contribute to favour vegetation, in this climate, may possibly depend on a certain quantity of sun-beams transmitted to us at proper times; but, this being a point which can only be ascertained by future observations, I forbear entering farther into a discussion of it.'

The concluding paragraph contains within it a prediction which we earnestly hope will be realized. 'In the first of my two series of observations,' Dr. H. remarks, 'I have pointed out a deficiency in what appears

appears to be the ſymptomatic diſpoſition of the ſun for emitting light and heat; it has laſted from the year 1795 to 1800. That we have had a conſiderable deficiency in the vegetation of grain, will hardly require any proof. The ſecond ſeries, or rather the commencement of it, for I hope it will laſt long, has pointed out a favourable return of the rich appearance of the ſun. This, if I may venture to judge, will probably occaſion a return of ſuch ſeaſons as, in the end, will be attended by all their uſual fertility.'

14. The next paper contains 'Obſervations on the Structure and Mode of Growth of the grinding Teeth of the Wild Boar, and Animal Incognitum. By *Everard Home*, Eſq. F. R. S.' The peculiarities in the mode of growth of the grinding teeth of the *ſus æthiopicus*, and of the elephant, were deſcribed by the author in a former volume of the Tranſactions, and noticed at length in our Review*. From the obſervations here detailed, it appears that the wild boar is poſſeſſed of ſimilar peculiarities with regard to dentition, although in a leſs degree, and taking place at a later period of life.

15. 'Account of ſome Experiments on the Aſcent of the Sap in Trees. By *Thomas Andrew Knight*, Eſq.' The experiments here related are of a very intereſting kind, but would carry us to too great a length were we to notice them minutely. The following are the moſt important.

'Chooſing ſeveral young trees of the crab, horſe cheſnut, vine, and oak, about half an inch in diameter, two circular inciſions were made through the bark, half an inch diſtant from each other. The bark was totally removed between thoſe inciſions, and the external coat of the wood ſcraped off. At the uſual ſea-

* Vol. vii. p. 10.

ſon the ſap roſe, and their branches ſhot, during the whole ſpring, with the uſual luxuriance. But that part of the ſtems which was below the inciſions ſcarcely grew at all; whilſt all the parts above the inciſions increaſed as rapidly as in trees whoſe bark remained in the natural ſtate; the upper lips of the wound alſo made conſiderable advances towards an union, but the lower ones made ſcarcely any.

'Soon after Midſummer, thoſe parts of the wood which had been deprived of bark became dry and lifeleſs to ſome depth, and the ſap, in conſequence, meeting obſtruction in its aſcent, ſome latent buds ſhot forth, in ſome of the plants, below the inciſions. When one of the ſhoots which theſe buds produced was ſuffered to remain, the part of the ſtem below it began immediately to increaſe in ſize; but, if it was at any diſtance below the inciſion above, the part between it and that inciſion ſtill remained very nearly ſtationary, ſo as to be, in the autumn, almoſt a whole year's growth leſs than the ſtem above the inciſions.

'Chooſing other ſtocks, which had each a ſtrong lateral branch, I removed the bark, in the manner deſcribed, in two places; the one above, and the other below, each lateral branch. The ſap here paſſed both my inciſions as freely as in the former experiment; the lateral branches between them grew with the greateſt vigour, and the part of the ſtem between thoſe branches and the lower inciſions increaſed much in ſize. I varied theſe experiments in every way that occurred to me, and the reſult uniformly was, that thoſe parts of the ſtems and branches which were above the inciſions, and had a communication with the leaves, through the bark, increaſed rapidly; whilſt thoſe below the inciſions ſcarcely grew at all, till a new communication with the leaves, through the bark, was obtained, by means of a lateral ſhoot below the inciſions.'—It appeared probable, therefore, that the current of ſap, which adds the annual layer of wood to

to the ſtem, muſt deſcend through the bark from the young branches and leaves.

When the inciſions in the bark were made in two places, ſo that a leaf was left between the places, the inſulated leaf acted juſt as the lateral branch had done; the part of the bark between it and the lower inciſion being apparently as well fed as any other part of the tree.

The power of the leaves in affording nouriſhment to the bark is further evinced in the following obſervations, where the effect of gradually reducing the quantity of leaves is ſeen. 'I had a luxuriant ſhoot of the vine in my vinery, exactly in the ſtage of growth I wanted; and this branch therefore was, towards its point, every day deprived of a ſmall portion of its leaf. The bark, in conſequence, became ſhrivelled and dry, and at length the buds below vegetated, and the point of the ſhoot died apparently for want of nouriſhment. I here obſerved, as I had frequently done before, that almoſt the whole action of each leaf lies between itſelf and the root; for the branch, in this caſe, was perfectly well fed below the uppermoſt unmutilated leaf, but failed immediately above it.

'Every branch in which I had yet attempted to trace the progreſs of the ſap having contained its medulla uninjured, the action of that ſubſtance next engaged my attention, and I made the following experiments on the vine. Having made a paſſage about half an inch long, and a line wide, into a ſtrong ſucculent ſhoot of this plant, I totally extracted its medulla, as far as the orifice I had made would permit me. But the ſhoot grew nearly as well as the others, whoſe medulla had remained uninjured, and the wound ſoon healed. Making a ſimilar paſſage, but of greater length, ſo that part extended above and part below a leaf and bud, I again extracted the medulla. The leaf and bud, with the lateral ſhoot annexed (in the vine),

vine), continued to live, and did not appear to ſuffer much inconvenience, but faded a little when the ſun ſhone ſtrongly on them.'

The author was now thoroughly ſatisfied, that the medulla is not neceſſary to the progreſſion of the ſap. Other experiments, where both the bark and medulla were removed, ſhewed that the wood and leaf could execute their office without them; for the leaf continued freſh and vigorous, and a thin layer of new wood was formed round its baſe, as far as the bark had been ſuffered to remain. It appeared clearly that all advancing fluids paſs along the alburnum, or ſap-wood of trees; as when this was cut through in an oak all round, not the ſlighteſt mark of vegetation appeared in the ſucceeding ſpring.

16. 'Additional Obſervations, tending to inveſtigate the Symptoms of the variable Emiſſion of the Light and Heat of the Sun; with Trials to ſet aſide darkening Glaſſes, by tranſmitting the ſolar Rays through Liquids; and a few Remarks to remove Objections that might be made againſt ſome of the Arguments contained in a former paper. By *William Herſchell*, L. L. D. &c.' A continuation of the author's obſervations is here given, and which is favourable to the opinion before ſuggeſted by him; and his arguments receive conſiderable ſupport from a compariſon of the phenomena reported with the correſponding mildneſs of the ſeaſon at the time, viz. the early part of the laſt year. He ſuſpects that one half of the ſun is leſs favourable to a copious emiſſion of rays than the other; and that its variable luſtre may poſſibly appear to other ſolar ſyſtems, as irregular periodical ſtars are ſeen by us.

17. 'On an improved reflecting Circle. By *Joſeph de Mendoza Rios*, Eſq. F. R. S.'

18. 'Obſer-

18. 'Obſervations and Experiments upon Dr. James's Powder, with a Method of preparing, in the humid Way, a ſimilar Subſtance. By *Richard Chenevix*, Eſq. F. R. S. &c.'* 'After the obſervations and experiments made by Dr. *Pearſon* to inveſtigate the nature of Dr. James's powder, and preſented by him to this Society, very little remained to be effected or deſired, towards a further knowledge of the ſubject. But thoſe very experiments ſerved to ſuggeſt, that the mode of preparation was far from being the beſt that the preſent improved ſtate of chymical knowledge might afford, and that, in all probability, a leſs defective compoſition might reſult from a proceſs more conformable to ſome improvements which of late have been advantageouſly applied to pharmaceutic chymiſtry.

'It may be laid down as a general principle, that, in delicate experiments, whether analytical or ſynthetical, fire (that potent and once believed to be univerſal agent) is too precarious in its means, and too uncertain in its application, to be employed with full and conſtant ſucceſs. And if it is ſtill recurred to, the advantage of promptneſs, and a remnant of ancient cuſtom, are the principal reaſons. But where other methods can be deviſed to effect the ſame combinations (and the humid way offers many), every perſon converſant in chymical knowledge will allow the benefit of adopting them. The recent improvement in the mode of preparing calomel, is a ſtriking example of ſuch ſalutary corrections being ſucceſsfully introduced.

'A few obſervations upon the formula according to which Dr. James's powder, or the *pulvis antimonialis*, is prepared, and upon ſome properties of antimony,

* The great utility and frequent employment of *James*'s powder, and its prototype, the *pulvis antimonialis*, render this communication highly in[illegible]ting; we therefore tranſcribe it at length.

will

will place this aſſertion in a more prominent point of view.

'In order to prepare this powder, we are told to take equal weights of bone or hartſhorn ſhavings, and crude antimony, and calcine them together, at a high temperature: in other words, to take phoſphate of lime, which already contains a great exceſs of lime, and add to it an oxide of antimony. In this proceſs, it has been ſuppoſed that the phoſphoric acid of the bone or hartſhorn will ſaturate not only the lime with which it was originally combined, but, in addition to it, a new portion of metallic oxide, and a new portion of lime. For what little ſulphuric acid might, during the proceſs, have been formed by the combuſtion of the ſulphur of the crude antimony, is diſſipated, at a much lower temperature than that to which the powder is expoſed.

'Every oxide of antimony with which we are acquainted is volatile at a high degree of heat; it would therefore be hazardous to aſſert, that it is poſſible to preſerve always the ſame proportion of antimony, whatever care may be employed in directing the operation; and a diſſimilarity in the chymical reſult muſt neceſſarily be attended with uncertainty in the medical application.

'To this property may be added another, no leſs conducive to error. That portion of oxide of antimony which is not volatilized, becomes, in a great meaſure, inſoluble in all the acids. What the effects of the gaſtric juice may be upon a ſubſtance which reſiſts the action even of nitro-muriatic acid, it is not my purpoſe to determine. It is ſufficient for me to ſay, that, as the quantity of inſoluble matter, in a given quantity of Dr. James's powder, prepared at different times, may vary, the effect of any doſe alſo may differ, according to the proportions of ſoluble and inſoluble matter.

'I look

'I look upon it as a fortunate circumstance, that those experiments and observations which I mentioned in the beginning of this paper, existed as a standard to which I might refer my own attempts, and by which I might estimate their validity. Dr. Pearson has proved (as by my own experiments I have found), that in Dr. James's powder about twenty-eight per cent. resisted the action of every acid. In examining some of the *pulvis antimonialis* of the London Pharmacopœia, I found the average quantity of insoluble matter to be about forty-four per cent. This proportion, however, was liable to considerable variation.*

'The powder here treated of is denominated, by Dr. Pearson, a triple salt, or a real ternary combination of a double basis (lime and antimony) with phosphoric acid. What I have mentioned with regard to the quantity of acid contained in bone or hartshorn, as being too small to saturate a new portion of these bases, may throw some doubts upon the possibility of any such combination in the present case. But I have made some more direct experiments, which tend to prove that no such combination does exist.

'I took some white oxide of antimony (formerly called Algaroth powder, precipitated by water from muriate of antimony), and heated it for a long time with phosphoric acid. I decanted the liquor, and washed the powder that remained. No antimony could be found in the liquor; nor could any traces of phosphoric acid be detected in the residuary oxide of antimony. I then took a solution of muriate of antimony, and divided it into two equal parts: into one, I poured distilled water; and into the other, a solution

* 'I find, from the information of several medical gentlemen, that the PULVIS ANTIMONIALIS is generally considered as stronger than Dr. James's powder. This seems rather extraordinary, when we consider that the quantity of insoluble matter is greater in the former than in the latter; and would almost lead us to suspect it to be the active part of the medicine.

of

of phoſphate of ſoda. In each liquor, a copious precipitate was formed; which precipitates, after being well waſhed, were dried. The weight of both was the ſame; whereas, it is evident that, had any phoſphoric acid been combined with the oxide, there would have been an augmentation of weight in that which was precipitated by the ſolution of phoſphate of ſoda. This precipitate likewiſe, upon examination gave no traces of phoſphoric acid. From theſe experiments it appears, that there exiſts no combination which can be denominated a phoſphate of antimony.

'To attempt an explanation of the real nature of the powder here ſpoken of, I had recourſe to ſome experiments of Monſ. Berthollet. By detonating ſulphuret of antimony and nitrate of potaſh in a crucible, he obtained a maſs, which he reduced to powder, and waſhed. The liquor gave, upon evaporation, a cryſtallized ſalt, which M. Berthollet terms an *antimoniate of potaſh.* I never could ſucceed in any attempt to form a ſimilar combination between the above white oxide of antimony and potaſh, owing, I believe, to the ſmall quantity of oxigen contained therein, compared with that which is combined with the oxide obtained by detonation. I cannot therefore ſay, that the powder in queſtion is, in any degree, what M. Berthollet would call an *antimoniate of lime.*

'But be the ſtate, whether of mixture or of combination, what it may, my purpoſe is to endeavour to produce a ſubſtance, which, from its certain mode of preparation, may be more equal and conſtant in its effects.

'Diſſolve, together or ſeparately, in the leaſt poſſible portion of muriatic acid, equal parts of the forementioned white oxide of antimony and of phoſphate of lime.* Pour this ſolution gradually into diſtilled water,

* 'In order to procure the phoſphate of lime, I diſſolved in muriatic acid a quantity of calcined bone, and precipitated by ammonia, in its ſtate

ter, previously alkalizated by a sufficient quantity of ammonia. A white and abundant precipitate will take place, which, well washed and dried, is the substitute I propose for Dr. James's powder.

'The theory of this precipitation is so clear and simple, that it does not require any comment. It may be useful, however, to those who wish to make this preparation, to remark, that it is absolutely necessary that the solution of phosphate of lime and of oxide of antimony, in muriatic acid, should, after being well mixed, be poured *into the alkaline liquor*, in order to obtain a precipitate homogeneous throughout the operation. For, should the alkaline liquor be poured *into the acid solution*, the water of the former would act upon the entire mass of oxide of antimony, while the alkali would precipitate the phosphate of lime only as it saturated the acid which held that salt in solution: thus, the precipitate would contain more antimony in the beginning; and towards the end, the phosphate of lime would be predominant. For the same reason, too, a pure alkali is preferable to its carbonate; for the carbonic acid disengaged, would retain in solution a portion of phosphate of lime.

'Whether this composition be a chymical combination, or a mixture, I will not take upon me to determine; but, for the reasons above mentioned, in speaking of Dr. James's powder, I believe it to be merely a very intimate mixture. At all events it must be more homogeneous than any that can be prepared in

state of greatest causticity. By this means, the excess of muriatic acid, which held in solution the phosphate of lime, is saturated, and the phosphate is precipitated; but no muriate of lime is decomposed, if the ammonia is quite free from carbonic acid. This is the most direct method of obtaining phosphate of lime pure. This salt is not decomposed, as some have asserted, by muriatic acid, but merely dissolved by it. I have been induced to state fully these particulars, because from the beneficial effects of this salt in the treatment of rachitis, as proposed by M. Bonhomme (ANNALES DE CHIMIE, Vol. 18. p. 113), it may become of general use. The oxide of antimony I obtained by precipitating, by water, the common butter of antimony of the shops.'

the

the dry way. It is entirely soluble in every acid that can dissolve either phosphate of lime or oxide of antimony separately; and to have it constantly and uniformly the same, no further address, in preparing it, is required, than to avoid the errors I have mentioned.

'As, after some medical trials of the powder, it was suggested to me, that it might be advantageous to render it somewhat stronger, I prepared another portion, by taking two parts of oxide of antimony and but one of phosphate of lime, and precipitating as above described. The medicinal power was then considerably increased.

'Dr. James's powder is a medicine which has been so long in use, and is so deservedly ranked among the most valuable we possess, that every attempt to render the process for preparing it more simple and more certain must be allowed to be of some importance. But whatever reason there was to think, by arguing upon its chymical properties, that I had really succeeded in improving its medicinal virtues, it still remained to be proved, by actual experiment, that the hoped for success was not merely conjectural. To ascertain this, I gave some of my powder to Dr. Crichton, Dr. Babington, and Mr. Abernethy; gentlemen, whose extensive practice and acknowledged skill sufficiently enabled them to judge of its medical properties. They all concur in opinion, that, in its general effects, it agrees with Dr. James's powder and the *pulvis antimonialis*; but, that it is more mild, and consequently may be given in larger quantities, seldom producing nausea or vomiting, in doses of less than eight or ten grains.'

19. 'Case of a young Gentleman, who recovered his Sight when seven Years of Age, after having been deprived of it by Cataracts, before he was a Year old; with Remarks. By Mr. *James Ware*, Surgeon.' The disease in this case was not the result of any evident cause, and was only accidentally discovered when the child

child was nearly twelve months old. He is ſaid, indeed, to have cut his teeth with great pain, and frequently with violent convulſive fits, when about ſix months old. In performing the operation with the couching needle, it was found, as is uſual in ſuch caſes, that the cataract was of a ſoft conſiſtence, in conſequence of which it could not be depreſſed. A large aperture, therefore, was made through the capſule, by means of which the cryſtalline was brought into contact with the other humours, and was gradually abſorbed. On the ſecond day it was found that the operation had been ſucceſsful, the child not only diſtinguiſhing different objects with tolerable preciſion, but being able alſo to judge pretty accurately of diſtances. Before this time he had never diſtinguiſhed by ſight any ſort of object, and when he wiſhed to diſcover colours, which he could only do when they were very ſtrong, he had always been obliged to hold the coloured object to his eye, and a little on one ſide, to avoid the projection of the noſe.

Having deſcribed the operation and the reſult, Mr. Ware inſtitutes a brief compariſon of the circumſtances attending it, with thoſe which took place in the well-known inſtance related by Mr. Cheſelden. The patient in the latter caſe was ſuppoſed to be born blind, and had the operation of depreſſion performed when he was between thirteen and fourteen years of age. Contrary to the experience of Mr. Cheſelden's patient, who is ſtated "to have been ſo far from making any judgment of diſtance, that he thought all objects touched his eyes, as what he felt did his ſkin," the patient, in the preſent inſtance, diſtinguiſhed the diſtance and figure of objects with tolerable accuracy. Other caſes of a ſimilar nature have led the author to ſuſpect that children, from whom cataracts had been extracted, had a notion of diſtance the firſt moment they were able to ſee. We would ſubmit it, however, to the ingenious author's conſideration, that the caſe

 above

above defcribed, and probably the others alluded to, are not perfectly analogous to that defcribed by Mr. Chefelden. In the latter cafe, the blindnefs appears to have been complete; whilft in the former there was a manifeft degree of vifion, as proved by the diftinction of colours; and this could not but be attended with fome knowledge of the figure or outline of bodies, however imperfect. A judgment of diftance, therefore, might probably in this cafe, as in others, have been the refult of a connexion between the fenfes of fight and feeling, acquired by experience.

Some remarks are fubjoined relative to the mode in which the cataract may beft be removed, when children are born with this diforder, and the time when it is moft proper to perform the operation.

The Baron de Wenzel, in his Treatife on the Cataract, recommends, in all cafes of this diforder, without making any exceptions, the operation of extraction, in preference to that of depreffion. But although, in the cafe of grown perfons, the operation of extraction appears to have very great advantages over the other, yet, in the cafe of children, Mr. Ware is inclined to prefer the latter. Children cannot, he obferves, be depended on to fubmit, with due fteadinefs, to the repeated introduction of inftruments, which is fometimes neceffary in extracting the cataract; and the eyes of fome are fo fmall, even at the age of thirteen or fourteen years, and in fuch a conftant rolling motion, that it is almoft impoffible properly to accomplifh the operation. Depreffion being more eafy to perform, has this advantage in the cafe of children, that it may be performed with equal fafety when they are only feven years of age, as at any fubfequent period of their lives. And where the cataract is fluid, and cannot confequently be depreffed, if the couching needle be paffed in the way in which it is ufually introduced

troduced to depreſs the cataract, and thereby a large aperture be made in the capſule of the cryſtalline (which operation, the author obſerves, may be performed with perfect ſafety, and with very little pain to the patient, whilſt the eye is fixed with a ſpeculum oculi), the opaque cryſtalline, being thus brought into contact with the aqueous and vitreous humours, will, in a ſhorter or longer ſpace of time, according to its degree of ſoftneſs, be abſorbed; and if there be not an opacity in the capſule, as well as in the cryſtalline, the pupil will become clear, and the patient will acquire a very uſeful ſight. If, in addition to the opacity of the cryſtalline, the capſule be alſo opaque, and, in conſequence of this, the operation do not prove ſucceſsful, the eye will nevertheleſs be perfectly uninjured, and it will be as fit, at a ſubſequent period, to have the capſule extracted, as it would have been if no attempt of the above kind had been previouſly made.

From the whole of the obſervations the author deduces the following concluſions.

'Firſt, When children are born blind, in conſequence of having cataracts in their eyes, they are never ſo totally deprived of ſight, as not to be able to diſtinguiſh colours; and though they cannot ſee the figure of an object, nor even its colour, unleſs it be placed within a very ſhort diſtance, they nevertheleſs can tell whether, when within this diſtance, it be brought nearer to, or carried farther from them.

'Secondly, In conſequence of this power, whilſt in a ſtate of comparative blindneſs, children who have their cataracts removed, are enabled, immediately on the acquiſition of ſight, to form ſome judgment of the diſtance and even of the outline of thoſe ſtrongly defined objects, with the colour of which they were previouſly acquainted.

'Thirdly, When children have been born with cataracts, the cryſtalline humour has generally, if not

 always,

always, been found either in a soft, or fluid state. If, therefore, it be not accompanied with an opacity, either in the anterior or posterior portion of the capsule, and this capsule be largely punctured with the couching needle, introduced in the way in which this instrument is usually employed to depress the cataract, there is reason to expect that the opaque matter will, sooner or later, be absorbed, the pupil become clear, and the sight restored.

'Fourthly, If, in addition to the opacity of the crystalline humour, its capsule be also opaque, either in its anterior or posterior portion, or in both (which circumstance cannot be ascertained before the operation), and, in consequence of this, the operation above mentioned should not prove successful, it will not preclude the performance of extraction afterwards, if this be thought advisable.

'Fifthly, The operation above mentioned being much more easy to perform than that of extraction, and it being possible to fix the eye with perfect safety during its performance, by means of a speculum oculi, it may be undertaken at a much earlier age than the latter operation; and a chance may of course be given to the patient of receiving instruction, without the loss of time which has usually been thought unavoidable, when children are born with this disorder.'

(To be continued.)

Art. LXIII. *The Principles of Surgery.* *By* John Bell, *Surgeon.* Vol. I.

(Continued from page 347.)

We are now entering into the consideration of *Hæmorrhagy*, a subject that, we have no hesitation in saying, the student will find here treated with a degree

a degree of minutenefs and precifion that cannot fail to excite the moft lively intereft, and to contribute effentially to his improvement in this moft important branch of furgery.

The author firft gives a hiftorical fketch of the practices of the older furgeons in cafes of hæmorrhagy, when the actual cautery and ftyptics, compofed of the moft ftimulating and corrofive matters, formed the chief means with which they were acquainted for the fuppreffion of dangerous bleedings. The agaric and fponge are inventions of later date. Of the latter the merits are thus difplayed.

'The fponge, which has been ufed chiefly by the celebrated Mr. White, is more ufeful than the agaric; it is like it in its operation, is really of value in practice; not to take the precedency of the needle, but to affift it. The fponge can be very thoroughly dried, it can be compreffed into a very fmall compafs, it can take any fhape, and may be thruft down into cavities and narrow wounds where the needle cannot go; it can be made fo hard, and preffed fo firm, by laying compreffes over it, as to have at once the effect of a compref and of a fponge; or rather of a comprefs having this curious property, that at firft it preffes moderately, but, if one drop of blood efcapes, the comprefs fwells by abforbing the blood, ftill preferves its contact with the bleeding artery, and fwells more, and preffes harder, exactly in proportion as fuch preffure is required. This is plainly the effect of a fponge, whether it be nitched in betwixt two bones, to comprefs an artery which the needle cannot reach, or whether it be laid flat upon an open fore; as after cutting out the breaft, or after an amputation done according to the old fafhion, where the furgeon ufed to drefs his ftump open, and to heap compreffes tied with a firm bandage above each piece of agaric or fponge.

The agaric poſſeſſing a degree of this property is of uſe; even our common lint poſſeſſes this quality of abſorbing and ſwelling in a ſlight degree. But the agaric and ſponge are both ſo excellent in this reſpect, that even thoſe who are the leaſt inclined to uſe them muſt acknowledge that, though the agaric will often fail, it has yet enabled ſurgeons to perform the greateſt amputations ſafely. And the ſponge, by Mr. White's practice, is the only thing that can ſtand by the ſide of the ligature to aſſiſt it. I am ſenſible that by thruſting down a ſponge I have ſaved a patient's life when I could not have extricated myſelf by any nicer operation.'

But the diſcovery of the needle and ligature for the ſuppreſſion of hæmorrhagy by *Ambroſe Paré* (improperly here termed Paræus), forms an epoch in medical ſcience, ſcarcely inferior, it is juſtly remarked, in importance to that of the circulation of the blood by the immortal Harvey. Yet, as has frequently happened on ſuch occaſions, its introduction was oppoſed, and the author vilified, by his cotemporaries, and was not generally adopted in practice till near two centuries afterwards. A long detail of the diſputes that exiſted between *Paré* and the phyſicians of his time is given, but which is better calculated to amuſe than to inſtruct the ſtudent. *Paré* had three general ways of tying an artery: by paſſing the needle round the artery, down on one ſide and up the other, and ſo tying in with it a quantity of fleſh: or by drawing the arteries out from the wound, as from the face of a ſtump, by the artery forceps with a ſpring handle, which he called *valet a patin:* or by ſtriking the needle above the place of the wound, through the fleſh of the limb, down quite to the bone, ſo as to tie in the great artery of the limb, and along with it much of the fleſh. Such is the ſyſtem of inſtruction on this ſubject, which has ſcarcely been improved by modern ſurgery.

Previous

Previous to treating on the artificial means of ſuppreſſing hæmorrhagy, the author conſiders the natural cauſes by which a hæmorrhagy is ſtopped. 'When hæmorrhagy ſtops of its own accord,' he obſerves, 'it is neither from the retraction of arteries, nor the conſtriction of its fibres, nor the formation of clots, but by the cellular ſubſtance which ſurrounds the artery being injected with blood.'

Aneuriſm, even that which proceeds from a direct wound of the artery, grows very ſlowly. When the brachial artery is wounded in bleeding, we find no tumour on the firſt day; on the ſecond or third day the aneuriſm begins to form, but is then no bigger than a pea: it is only after five or ſix weeks that it acquires ſuch a ſize as to make it the ſubject of an operation. This ſlow growth led to the belief that the artery was not wounded through all its coats, but that the internal one remained entire, and by its dilatation gave riſe to the tumour. Hence they expected to be able by compreſſion to reduce the dilated part, ſtill preſerving the canal of the veſſel entire.

There is, however, the author remarks, no foundation for the opinion of an artery being wounded in its external coat merely; nor is it leſs imaginary, that the blood can be puſhed back from the aneuriſmal bag into the artery. There is only one caſe where this can be done, and that is, in the aneuriſmal varix, where the artery and vein, being both wounded, have not healed apart, but have adhered, a free communication being formed betwixt the artery and vein; the vein is dilated by the pulſations of the artery, the blood is ſtill circulating, and fluid. But in the proper aneuriſm, the blood is firmly coagulated; and when the tumour appears to ſubſide on preſſure, the ſubſidence is occaſioned by the ſinking of the blood into the ſurrounding cellular ſubſtance.

The wound of an artery will not heal by adheſion, ſo as to preſerve the continuity of the canal; for the

arterial coats are, in their nature, hard, unyielding, and callous; a clot is uſually interpoſed betwixt the lips of the wound; the blood runs freely along the canal of the artery, ready to flow through the ſlit upon the ſlighteſt exertion of the arm, or ſlighteſt motion of the clot; and there lies a conſiderable collection of blood between the wound of the artery and any compreſs that we can apply. Attempts have been made, one by the author himſelf, to unite the lips of the wound in the artery by ſuture, but failed. Mr. *Lambert*, of Newcaſtle, indeed, once ſucceeded in this operation.

When compreſſion ſucceeds in the cure of aneuriſm, it operates, the author remarks, by obliterating the canal of the artery. The tumour is preſſed againſt the artery, the artery is flattened betwixt the tumour and the bone, the circulation in the main channel is interrupted, and the collateral channels are enlarged till they become able to ſupport the arm, and ſupply it with blood: when theſe leſſer arteries are ſo enlarged, and rendered active, as to work the blood forwards, it not only forſakes the main trunk, but has a tendency to continue in this new rout. The main artery is forſaken of the blood, its ſides are kept in cloſe contact, they adhere to each other, and the artery becomes, like the hypogaſtric arteries or umbilical vein, a firm cord.

'I am perſuaded the old phyſicians accompliſhed with their compreſs exactly the ſame operation that we perform with the needle; they obliterated the canal of the artery; and had they underſtood the pathology of this diſeaſe, or the effect of their own operations, they would have been able, I am perſuaded, to have deſcribed to us the period of coldneſs and of interrupted pulſe, and the manner of its return, juſt as diſtinctly in their operation by compreſſion as in our's by inciſion; and certainly had they ſucceeded, as they imagined they did, viz. by diſcuſſing the tumour and healing

healing the wounded artery, they would have told us, in place of this *duritiem nerveam et ſolidam*, how the pulſe was felt in the bending of the arm, as diſtinctly after the cure as before the artery was wounded. They would have compreſſed the artery only till they had obliterated it, and then have left the abſorption to Nature; but would not ſurely have continued this ſevere bandage for years.'

It is, admitted, however, that, at the very firſt moment after the puncture of an artery in bleeding, it is poſſible to ſucceed in re-uniting the wounded artery by compreſſion. But this can only be before the aneuriſm is formed, before any tumour of blood is interpoſed betwixt the compreſs and the artery, before the cellular ſubſtance is crammed with blood, or ſeparated from that artery, which it ſhould ſupport and aſſiſt in its adheſion. Aneuriſm in this caſe is prevented, not cured.

The ſeveral forms which a wounded artery may aſſume are thus clearly deſcribed: 'Firſt, it generally happens, after any accident of this kind, that the compreſſion which the ſurgeon makes, while it prevents the outward bleeding, is not ſufficient entirely to ſubdue the action of the artery, which bleeds inwardly! The blood is then poured out under the faſcia! the holes, or lancet-wounds, in both ſides of the vein (through which the artery was ſtruck), heal! the blood is extravaſated under the faſcia, and the faſcia, by its great ſtrength and tenſion, reſiſts the effuſion, ſo that it takes place very ſlowly. It is thus, that, in about a month or ſix weeks, the common aneuriſm of the arm is formed, having for its external coat the thick faſcia of the biceps muſcle.

'Secondly, It ſometimes happens, that the preſſure made by the ſurgeon at the time of the accident is ſo ſteady as to produce an adheſion of the wounded lips of the artery with the wound of the faſcia: then the diſeaſe does not appear in its proper form; there is no reſiſtance

reſiſtance from the faſcia; the artery does not eject its blood ſlowly into the cellular ſubſtance under the faſcia, but drives it freely under the common cellular ſubſtance of the ſkin: the regular form of the diſeaſe, the circumſcribed tumour, is wanting, and the whole arm, from the ſhoulder to the wriſt, is black with extravaſated blood, as if mortified.

'Thirdly, It often happens that the preſſure is ſtill more correct, ſteady, and well ſupported, and the vein on the outſide of the faſcia is kept in cloſe contact with the faſcia; while the wounded artery within the faſcia is kept in cloſe contact with the inner ſurface! The artery unites with the inner ſurface of the faſcia, the vein unites with its external ſurface; and a lateral communication being thus eſtabliſhed betwixt the artery and vein, the vein is dilated by the force of the artery into a varix, which, from the nature of its connexion with the artery, is named aneuriſmal varix. In this diſeaſe the blood paſſes ſo eaſily into the vein, that little blood goes downwards along the artery; the arm below is impoveriſhed of blood, and is greatly weakened; the dilatation of the vein increaſes almoſt to burſting; and as the vein and artery, though they run parallel, are not in contact with each other, but are ſeparated by the ſheet of tendon, named the faſcia, the communication betwixt the vein and artery comes to be of conſiderable length! by emptying the dilated vein, and pinching with your fingers and thumb, you can diſtinctly feel the communication betwixt them.

'Fourthly, The artery where it lies within the faſcia is ſurrounded with a ſet of ſmall concomitant veins, which, from their encircling the artery, are named *venæ comites*,' or *ſatellites*; theſe alſo are ſometimes ſtruck with the lancet; and, by continued preſſure, the artery, the internal vein, the faſcia, and the external vein, are all maſſed together with a conſiderable degree of confuſion, and thickening of parts! But however confuſed the other appearances may be

in

in ſuch a caſe, this circumſtance will diſtinctly mark the nature of the diſeaſe; that, in performing the operation (as there are two veins and one artery united by adheſion), the ſurgeon will find two ſucceſſive ſacs of blood, one under the other, with a ſmall orifice of communication betwixt them.'

Mr. *Bell* next conſiders the condition of an artery when tied with ligatures. This queſtion is of no ſmall importance, for its ſolution will enable us to underſtand the nature of thoſe ſecondary hæmorrhages which follow operations, and which are ſo alarming to the ſurgeon and dangerous to the patient. The ligatures applied round an artery operate, he obſerves, by making the ſeveral points of the arterial canal paſs through the ſeveral ſtages of inflammation, from adheſion in one point to gangrene in another. The ſpace included between the ligatures, when two are employed, falls into gangrene; the ſpace immediately under the ſtricture of each ligature adheres: this adheſion prevents the gangrene or the inflammation paſſing along the higher parts of the arterial canal; but the inflammation affects the arterial tube a little way upwards and downwards, ſo as to thicken its walls and contract its cavity, whence the canal of the artery is obliterated a little way beyond the exact place where it is tied.

The burſting of an artery after it ſeems ſecurely tied, ariſes ſometimes from the unfavourable condition of the artery. We are ſenſible, towards the decline of life, of changes in the great arterial trunks: the cellular ſubſtance which joins the coats of the arteries is diſeaſed; the whole tube is ill diſpoſed to paſs through thoſe changes which are familiar to the other ſoft parts. They do not adhere, inflame, thicken, and obliterate, as ſound parts do. They are too brittle to bear a ligature, and break and tear acroſs at the moment of tying it. If the coats reſiſt the ligature

gature at firft, they do not adhere; and of courfe, when the ligature falls off, the artery opens, and the hæmorrhagy returns.

Yet it is not to this unhealthy condition of an artery that fecondary hæmorrhagy is moft frequently owing. The indifpofition of the arteries never can explain the difference of danger in the two operations of aneurifm and amputation. In the latter cafe the arteries rarely give way. But in the operation for aneurifm of the thigh, the difference of fecurity is very great; for this operation is, on the other hand, fo full of uncertainty and danger, that hardly any cafe can be mentioned in which the furgeons have not been alarmed, and the patient in great danger from fecondary hæmorrhagy: it is an operation never performed but by furgeons of the firft eminence; and yet more, perhaps, have died than have furvived it. This frequent failure is attributed by the author to ulceration of the artery.

'*Secondary hæmorrhagy*,' he remarks, 'arifes from *ulceration of the artery* more frequently than from any other caufe! In amputation, fuch ulceration happens only when the ligatures, having been firmly tied round the nerves, are prevented from flipping off, or when the whole furface of the ftump falls into difeafe, and is eroded; but in aneurifm it is peculiarly frequent, from the manner in which a great length of the artery is infulated and detached from the furrounding parts. Surgeons have been ufed to few bowels, as if they had no comprehenfion of fucceeding otherwife than by the mere firmnefs of the future; as if Nature had nothing to do in the cure! In like manner, in tying arteries, they pull their ligatures with a firmnefs that defeats its purpofe: here, alfo, they feem to depend entirely upon the mere mechanical force, as if there were no procefs of Nature to follow this mechanical ftricture, nor to fupport the artery when the ligature is withdrawn.

'If

'If the ſurgeon, forgetting how ſlight a force ſuffices for ſuppreſſing the pulſe of a naked artery, and for laying its ſides in contact, pulls his ligature with all the firmneſs which the artery can bear, although the artery be not immediately cut acroſs, its coats may be twiſted and weakened; or, though not even weakened, they may be ſo violently compreſſed, that not only the portion of the tube intercepted between the two ligatures, but the part immediately under each ligature, will fall directly into gangrene, in place of adhering; ſo that on the third day, when the ligature is withdrawn, it may bring along with it the end of the artery.

'If the ſurgeon, in place of diſſecting the artery fairly, ſtrikes his needle coarſely under it, and includes much of the muſcular ſubſtance, or other ſoft parts, the preſſure never is ſufficient; it is, even at the firſt, inſufficent, from the ſoftneſs and yielding of the parts: there is little preſſure, there is no adheſion of the artery under the ligatures, there is no amputation of the intercepted part of it!—the cellular ſubſtance and muſcular fleſh fade, and give on the third or fourth day: but the artery itſelf is ſtill entire, and the blood, by this ſlackening of the ligatures, paſſes along the canal of the artery, and out at the wounded point; and as the ſtructure of the artery is but little affected by ſo ſlack a ligature, the artery continues entire; the ligature keeps its place round the artery, and, though it does not compreſs the artery, it irritates it, and is never diſengaged till the artery falls into ulceration, and burſts.

'If the ſurgeon be ſtill more awkward in his operations, he will not merely ſtrike his needle through the fleſh, but will take the nerve into the loop of his ligature! for every great artery has the great nerve of the limb accompanying it: the brachial artery has the great radial nerve; the femoral artery has the great anterior crural nerve; the great artery, nerve, and internal

ternal veins of each nerve, and internal veins of each limb, lie in a peculiar ſheath; and, in order to tie the artery apart from the vein and nerve, it is neceſſary not only to cut up the general faſcia of the arm or thigh, but to diſſect this peculiar ſheath of cellular ſubſtance. Now, authors have always talked ſlightly of tying the nerve, as if the tying it related only to the nerve itſelf! No! it relates to the ſecurity of the artery! An artery, tied with a ligature, is deſtroyed in a few days; but a nerve, tied with a ligature, is hardly affected by it. The nerves are peculiarly ſtrong, their coats hard and firm; a ligature, tied round a nerve and artery together, as it cannot deſtroy the nerve, keeps its hold upon the artery, till, by the irritation of the ligature, and other obvious cauſes, it ulcerates and burſts; or if this can be prevented, it is only by cutting the ligature timeouſly away, which cannot be done without a degree of difficulty and danger.

'But there are ſtill other cauſes of the ulceration of the arteries. If the ſurgeon, anxious to enſure the obliteration of the artery, reſolves to lay a conſiderable length of the ſides of it in contact, what does he do but inſulate the artery, tear it up from its bed among the cellular ſubſtance, ſeparate it from all thoſe vaſcular connexions which kept it alive?—he expoſes it to almoſt inevitable ulceration! This has been practiſed upon the femoral artery in a great variety of ways, all of them ingenious, but all in direct oppoſition to the principles of ſurgery.'

The practice, therefore, of tying the artery with broad tapes and the like; the laying it out along a piece of cork, or bent leather; the laying relays of ligatures above and below the place where the proper ligatures are applied; the tying a conſiderable length of the arterial canal with four thick coarſe ligatures in place of two; the ſtripping a conſiderable extent of the artery of its cellular ſubſtance; the ſurrounding the artery with pellets of ſcraped lint, and keeping it extended

extended acroſs the foul and gangrenous ſac, like a water-pipe acroſs a hollow piece of ground, are all, the author juſtly obſerves, the moſt certain means of cauſing ulceration.

'It is from not foreſeeing the ill conſequence of it, that the operator is tempted to go upon this dangerous ground: he ties the artery; he is at pains to keep it inſulated; he is happy to think, that, though it ſhould give way, it will be within his reach; he knows where to find it; it burſts, and he ties it again. But in place of conſidering this part of the artery as of any value, or likely to be uſeful, he would do well to conſider it as dangerous: he ſhould not by any means apply his ligatures cloſe upon the breach or wound in the artery, under pretence of ſaving inoſculating branches; he ſhould rather conſider this as a portion of the artery, which, before the cure be accompliſhed, muſt be inevitably deſtroyed: he ſhould tie the artery, at the two extremities of the ſac, as cloſe as poſſible to the ſurrounding fleſh; and ſhould then cut it acroſs, that it may ſhrink for protection among the fleſh, and heal ſoundly along with the reſt of the ſuppurating ſac.'

But there is ſtill another kind of *ſecondary hæmorrhagy*, which ariſes from the inoſculating arteries, and takes place in this way. While the circulation in the main trunk of the artery is languid, theſe are gradually enlarging; when the aneuriſm is near burſting, the preſſure upon all the adjacent parts is very great, and the articulating or inoſculating arteries are ſtill more enlarged; and the moment the operation of tying the main artery is performed, the whole blood of the limb paſſes through thoſe arteries. Sometimes branches of them are cut in the time of the operation, and often they are eroded from the ulceration and condition of the ſac. As ſome of thoſe branches may open into the aneuriſmal ſac, it happens that, after the

the main artery has been tied in the upper part of the limb, without laying open the ſac itſelf, that this will become again diſtended and pulſating, forming thus a kind of ſecondary aneuriſm, but which yields, in general, readily to preſſure.

The author concludes this part of the ſubject in the following terms.

'Thus have I endeavoured to inveſtigate, in a general way, the cauſes of a ſecondary hæmorrhagy. I aſcribe the moſt dangerous bleedings, both in amputation and in aneuriſm, to the ulceration of the great artery: ſome of the cauſes I hope I have explained to your ſatisfaction; and the practical concluſion which I would deduce from this doctrine is of no ſmall importance; it has relation, more or leſs direct, to every great operation; and therefore reflect, I beſeech you, on thoſe facts and principles, and judge for yourſelves. It is my opinion, that a great artery never can be ſafe while the ligature is about it; for, till it comes away, the artery cannot be ſaid to have adhered; cannot be buried in granulations, nor ſupported by the ſurrounding fleſh; cannot be out of danger of ulceration. Nor can a great artery ever be ſafe, while it remains inſulated, though ſurgeons ſeem to take a pleaſure in ſeeing it lying fair along in the cavity of an aneuriſmal ſac; but they ſhould recollect, that, if the artery lies more within their reach of operation, it is alſo ſurer to need it: being thus inſulated, ſtripped of its cellular ſubſtance, deprived of its nutritious veſſels, the part which is included betwixt the two ligatures muſt gangrene; the parts under the two ligatures often, in place of adhering, will ulcerate; the ulceration, in place of ſtopping when the ligatures fall off, will continue: and as the artery is an inſenſible and firm part, entering ſlowly into diſeaſe, it ulcerates ſlowly, and burſts only on the tenth, twelfth, or fifteenth day.

'We

'We have reafon, then, to believe that the oldeft practice is the beft; that whenever a great artery is tied it fhould be cut acrofs betwixt the two ligatures, that it may fhrink, and bury itfelf among the furrounding flefh. We know two important facts which direct us to this bold practice: Firft, That whereever we do tie an artery with two ligatures, the intermediate piece is inevitably deftroyed; and it were furely more prudent to cut the part acrofs with the knife, than to allow it to be thus flowly deftroyed by ligatures, with danger of the ulceration extending along the artery thus ftretched out, and held infulated. Secondly, We know that, though we are never alarmed with the femoral artery burfting in amputation, where the ligatures come eafily away, yet in aneurifm our ligatures remain too long: they feldom loofen till the twelfth or fifteenth day; and there have been few operations in which fecondary hæmorrhages do not make part of the narrative of the cafe.

'I think that by cutting acrofs the artery, tied in aneurifm, we fhould put it nearly in the fame condition with that tied upon the face of an amputated ftump. In operating in any confiderable aneurifm, then, I would be careful to cleanfe the fac thoroughly of its putrid blood; I would not merely open the general fafcia of the limb, but diffect carefully that peculiar fheath which inclofes the great artery, veins, and nerve. I would tie the artery clear of the nerves, which, being indeftructible, hold the ligatures too long; and I would have it clear alfo of mufcular flefh, which, while it detains the ligature, prevents it operating fully upon the artery. The bare artery I would tie, with moderate firmnefs, with a ligature fmaller than is commonly ufed, and as near as poffible to the found parts. I would not infulate it with pieces of leather or cork, nor lay compreffes along its courfe, but cut it acrofs, that it might fhrink among the furrounding flefh. In tying a great artery, I would take

every precaution that might enſure the effect of the ligature upon the bare artery, and enable me to draw it early away; and I would be eſpecially careful to prevent my ligature being embarraſſed with the ſurrounding parts.'

The ſixth *Diſcourſe* treats of the inoſculation of arteries. A general ſketch of the arterial ſyſtem is here given, and the importance of inoſculations to the general health and preſervation of the body explained. It is ſhewn that the inoſculation of arteries is not peculiar to any joint, limb, or organ of the body, but is an eſſential proviſion of Nature for the free circulation of the blood; and that no part is without inoſculations ſufficient to ſupport it againſt all obſtructions. No ſooner do the two great arteries of the axilla and the groin emerge from the trunk of the body, than they eſtabliſh ſufficient connexions with each other (diſtant as they are), to enſure, by the inoſculation of the epigaſtric and internal mammary arteries, the continuance of life, even though the aorta itſelf ſhould be interrupted. Again; the two great fleſhy joints of the haunch and ſhoulder are ſo ſurrounded with copious inoſculations, as to enſure the life of the extremities, though their arterial trunks were interrupted. Not only, therefore, may the femoral artery be ſafely tied in the middle of the thigh, but the femoral artery, the profunda, and even the iliac artery within the pelvis, may all be obliterated without the limb falling into gangrene: the ſame holds good of the ſuperior extremity.

Our limits will not permit us to follow the author in the numerous important phyſiological, and pathological deductions which he makes from this doctrine. He obſerves, in general, that inoſculations aſſiſt the free circulation of the blood, and allow of retrograde motions when required. By connecting many arteries, they enable the blood to leave thoſe veſſels which are obſtructed, or cut off, and ſerve to accumulate the

force

force of many arteries upon that point where the veſſels are particularly required to act. Inoſculations increaſe all the powers of the circulation in the extreme arteries, and are multiplied in exact proportion as the arteries recede from the heart.

Inoſculation endows the circulating ſyſtem with peculiar aptitudes and powers; it is eſſential to free circulation, ſecretion, and nouriſhment; to the functions of the glands and viſcera; to the regeneration of parts that are deſtroyed; to the ſaving of parts that are injured; and this equable motion of the blood, in every direction, is eſſential to adheſion.

Hence reſults the following rule of practice. The fear of interrupting the great arteries proceeds from ignorance of pathology. 'Wounds of the axillary artery,' the author obſerves, 'like wounds of the femoral artery, are often dangerous from ſecondary bleeding, but never fatal from the want of inoſculations. We may tie the greateſt arteries confidently, wherever they are wounded without the trunk of the body. We ſhould tie as boldly the arteries at the groin, or in the axilla, as the leſſer branches going down the thigh or arm. The common way of cutting off the thigh, or amputating at the ſhoulder joint, ſhould be forſaken: it is bad doctrine, and cruel practice.'

Having ſpoken thus generally of the arterial ſyſtem, and the accidents and diſeaſes to which it is liable, the author, in the ſeventh *Diſcourſe*, enters into the particular conſideration of aneuriſm, its hiſtory and cauſes. The reader will here find a vaſt number of important practical remarks, illuſtrated by a variety of intereſting caſes; but for theſe we muſt refer to the work itſelf: the ſtudent will find his labour amply rewarded in the peruſal. We proceed now to a ſubject of ſome novelty; at leaſt it is exhibited in a new light: viz,

viz. what the author, terms *aneurifm from anaftomofis.*

Under this denomination are included thofe excrefcences which refemble the tumours that appear in new-born children, occupying chiefly the lips, cheeks, eyelids, or hairy fcalp, and which grow in procefs of time to an important fize, burfting at laft, and bleeding furioufly, fo as to oblige us to cut them out. It often begins in adults from unknown caufes, increafing from a trivial pimple-like fpeck to a formidable difeafe. This aneurifm confifts in a mutual enlargement of the fmaller arteries and veins. It is marked by a perpetual throbbing, grows flowly, but incontroulably, and is rather irritated than checked by compreffion. It beats ftrongly upon every occafional exertion, and fwells up in fpring and fummer with a fuller and more active pulfation. It beats powerfully in the time of menftruation; and by the inceffant pulfation, and occafional turgefcence, it forms among the cellular fubftance, or among the dilated veins, facs of blood. Thefe little facs form apices and tender points, which become livid and very thin, and burft from time to time, and bleed fo much as to reduce the patient to extreme weaknefs.

There are varieties of this difeafe, the author remarks, which nothing but a variety of cafes can explain. If neglected, it becomes incurable, and when incurable, may in time prove fatal. It becomes incurable when, having been operated upon with a partial incifion, inftead of being extirpated, it is but irritated, and grows till it fpreads its roots among the adjacent parts. It becomes incurable when it occupies a great extent of fkin, and when it affects any of the vifcera.

With refpect to the cure of this fpecies of aneurifm, if the term may be allowed, it can only be accomplifhed, the author remarks, by extirpation. You muft not cut

cut into it, but cut it out. If you merely cut into it, the hæmorrhagy is profuſe, and the cure imperfect; but if you cut round it, and at a little diſtance from its root, in place of the profuſe hæmorrhagy from numberleſs arteries, you have but a ſlight bleeding from one or two, which are extremely ſmall. This aneuriſm is a mere congeries of active veſſels, which will not be cured by opening it: all attempts at obliterating them with cauſtics, after a ſimple inciſion, have proved unſucceſsful; nor does the interrupting of particular veſſels which lead to it affect the tumour: the whole group of veſſels muſt be extirpated. Theſe purple and ill-looking tumours, becauſe they are large, beating, painful, covered with ſcabs, and bleeding like a cancer in the laſt ſtage of ulceration, have been called cancers, incurable bleeding cancers, and the patient left entirely to his fate. The real nature of the diſeaſe will be beſt underſtood by the recital of a caſe of the kind; we therefore tranſcribe the following.

'Mr. N—— had a child born to him at the full time, very ſtrong and healthy, but with a ſmall dimple or ſpot upon the right temple, of a livid colour; flat, more like a ſtain than a tumour. It was about the ſize of a ſixpence, and totally void of pulſation. But this portentous ſpot, when the child was about a twelvemonth old, began to change its nature. It roſe more prominent in the centre; it was like a ſmall berry, purple, ſoft, and very tender; and upon the ſlighteſt touch it would bleed, not like a fretted ſore, but very profuſely, like a vein. Even the ruffling of his nightcap burſt the tumour: the parents were kept in unceaſing alarm, leſt (as often happened) it ſhould burſt during the night, and bleed the child to death. They watched him with inceſſant care, and had a compreſs and bandage, with a piece of lead in it, always ready, and with which they repreſſed the bleeding.

'The child was about a year old when the tumour began to bleed, and the pulſation began in it about the ſame time; and when he laughed, or cried, or coughed, or ſtruggled with his feet and hands, the tumour ſuddenly puffed up with a perceptible motion. At ſuch times, the ſlighteſt touch made it bleed, and, in the moment of burſting out, the blood flowed in a full ſtream, which often darted to the diſtance of a yard.

'This ſtate of anxiety the parents endured patiently for four years, when the tumour was greatly extended: it now covered two inches or more of his temple; the pulſations, when the boy was vexed or heated with exerciſe, were very ſtrong, and the bleedings were frequent and very profuſe; ſo that the child was at times quite blanched with the loſs of blood. But he was now grown up to ſtrength, and they reſolved to ſubmit their child to an operation, not to remove a deformity, but to ſave his life.

'A ſurgeon of very conſiderable knowledge in his profeſſion performed this operation; I aſſiſted him, and had an opportunity of ſeeing the nature of this tumour, and the effect of cutting into its ſubſtance. The appearance was very ſingular indeed. A ſufficient number of needles, tenaculums, and hare-lip pins were provided, not one of which can, in any ſuch operation, be of the ſmalleſt uſe. The inciſion was made directly along the middle of the tumour: the firſt inciſion was accompanied with a guſh of blood, as if a bag of blood, ten times the ſize of this tumour, had been cut into. The blood continued to ruſh out impetuouſly; we were all covered with it, and the child ſtruggled very violently. The operator then cut down into the centre of the tumour; he cut quite down to the bone, hoping to come at ſome great veſſels which fed the aneuriſm: and the two ſides of the tumour were now held apart with hooks and forceps to let him uſe his needles. The appearance

appearance was very ſingular, and muſt have been very confounding to a perſon who began the operation with any hopes of finding one or more remarkable arteries. For, although the tumour, before the operation, was eaſily flattened, as if it had been a mere dilated vein, or ſome ſac of blood, there was, in truth, no ſac, great nor ſmall; the whole ſubſtance of the tumour (even in its very centre, and under the point where it was moſt particularly livid and thin) was perfectly cellular. The ſubſtance of it was cellular, ſtringy, and expreſsly reſembling the corpora cavernoſa penis; it was uniformly cellular, and ſingularly firm: thoſe cells were filled with blood from the arteries; the arteries entered into the tumour in all directions, ſo that no preſſure could command them; and the little arteries, being all cut directly acroſs in the centre of the tumour, bled each of them from both ends. Seven or eight ſmall arteries bled from the oppoſite ſides of the tumour; the ſtreams of blood, which were very ſmart, croſſed and interſected each other in every direction; the arteries bled abſolutely like the ſpout of a watering pan, while the dark and denſe blood of the veins ran in a full ſtream down the face, choaking the boy while we held his head firm upon the pillow.

'The needle was ſtruck under one of the largeſt arterial mouths, but without effect; it was now eaſy to foreſee that ligatures would be of no ſervice: the corner of a ſponge, being cut into a proper ſhape, was thruſt down into the inciſion, and ſupported with compreſſes, and fixed with a bandage. There was ſome reaſon to hope (though very ſlight indeed) that a tumour which had been ſo thoroughly opened might be gradually deſtroyed by cauſtics. The gentleman who performed the operation continued for many weeks to uſe, in various ways, the cauſtics, compreſſes, ſponges, and the bandage, but all in vain; the tumour, even before it was healed, had acquired its

 former

former ſize, and, the moment the bandages were relaxed, it ſwelled again. While they were continually occupied with the cure of the ſore, and applied the bandages night and day, the aneuriſm was, no doubt, prevented from bleeding; but no ſooner was the boy allowed to go to play with his companions and little brothers, than it burſt out again; it bled now as profuſely as ever. Many a time they were alarmed for his life: the bloody ſcenes that paſſed for two or three years were very diſtreſſing to the parents.

'This boy is now ten years of age, of a fair complexion, healthy, and active; the hæmorrhages are leſs frequent: he has loſt no blood for theſe three months, and his father is flattered with the hopes of the diſeaſe changing when he comes to a certain time of life; but this cannot happen! The tumour is increaſing ſo much, that it now covers four inches of his cheek; it is widening its baſis, and the baſis is growing more and more ſolid. When the boy runs, cries, or laughs, it riſes very high, beats ſo as to be ſeen at a conſiderable diſtance; and he ſays, that, when the maſter leaves the ſchool for a moment, and the boys make a noiſe, it beats terribly, and frightens him very much; and when he is playing at hide-and-ſeek, it beats ſo that he is frightened at it.

'In examining this aneuriſm, now at the diſtance of five years from the operation, I find the temporal artery and the tranverſe artery of the face enlarged, and running into the tumour at the upper part and ſides; but upon putting my finger into his mouth, and feeling the whole thickneſs of the cheek, I am not ſenſible of any remarkable artery entering from the ſide. When I preſs the tumour with the palm of the hand, I find that I can flatten it almoſt entirely. It is repreſſed by ſlow degrees, it riſes again very ſlowly; but, before you can count two hundred, it has riſen to its ſtationary ſize. It is only when I tickle his ſides, and make him laugh immoderately, that I can ſee it

of

of its full ſize, or perceive its pulſation. This boy's aneuriſm is manageable ſtill, but in a little while I fear it will ceaſe to be ſo; and when puberty arrives, I am apprehenſive there will be a very unfavourable change.'

Doubts may poſſibly be entertained with regard to the propriety of the term *aneuriſm from anaſtomoſis*, as applied to tumours of the kind here deſcribed; for they have certainly no analogy with the affection commonly termed *aneuriſm:* but, however this be, Mr. Bell appears very ſatisfactorily to have explained their nature, and to have pointed out the moſt judicious mode of treatment.

In our next we ſhall follow the author in his remarks on *Fractures of the Limbs.*

(To be continued.)

ART. LXIV. *Medical Reſearches and Obſervations; being a Series of Eſſays on the Practice of Phyſic.* Eſſay I. *On the Nature, Cauſe, and Cure of Fever; with Forms for extemporaneous Preſcription. By Dr.* ANDREW FERGUSON, *of Aberdeen.* 8vo. 375 pages, price 7*s*. London, 1801. PHILLIPS.

THE theory of fever here endeavoured to be ſupported, is founded on the baſis of the *Brunonian* doctrines, as they are termed; doctrines which, in their extent, we believe, few conſiderate practitioners, and who have profited by the light of experience, at preſent give their countenance to. 'All the ſymptoms of fever,' it is obſerved, 'ariſe from, and depend upon debility; this, therefore, is what we conſider as forming the proximate cauſe.' The author afterwards, however, appears to conſider the cauſe as more complicated; for he ſays, p. 68, 'we conſider all the ſymptoms

toms of fever to depend upon the ſtate of debility, deficience of oxygenation, the natural heat of the body, and the incapacity of the body for attracting and retaining the proper quantity of heat and oxygen, which are ſo very neceſſary for the purpoſe of health. The diminution of the energy of the brain, and of ſenſibility, can only be owing to a deficience of this ſtimulus, &c.'—The indication of cure conſiſts, conſequently, 'in giving the proper tone and ſtrength to the muſcular and nervous ſyſtem, according to the degree of debility preſent.'

With reſpect to the execution of the work before us, we muſt obſerve, that it wants that ſimplicity and order, which are ſo conſpicuous in the *Elementa Medicinæ* of Dr. Brown, and which, indeed, conſtitute its chief merit. The author affects to differ in ſome reſpects from this ſyſtem, but it is rather in terms than in reality. The exchange of *excitability* for *vitality*, of *excitement* for *vitalment*, and of *ſtimuli* for *vital powers*, tend, in our opinion, merely to confuſe the ſubject. The new chemical doctrines are applied in a manner too vague to afford any illuſtration of the matter.

ART. LXV. *A Compendium of the Anatomy of the Human Body; illuſtrated by upwards of One Hundred and Sixty Tables, containing near* 700 *Figures, copied from the moſt celebrated Authors, and from Nature. By* ANDREW FYFE. In 3 vols. 4to. about 500 pages of letter-preſs, price 5*l* 5*s*. Edinburgh, 1801. London, KAY.

OF the treatiſe before us a ſhort notice will ſuffice. It is a work purely deſcriptive, the letter-preſs being merely explanatory of the different tables: it is almoſt needleſs to add, therefore, that it is not likely

to

to have many attractions for the anatomical student. Where little or no reference is had to the general uses and economy of parts, and especially where the morbid state is entirely overlooked, it is difficult, and almost impossible, to fix the attention of beginners in this dry study. The utility of extensive treatises of this sort is probably not very great. It is certain that they are inadequate to convey a knowledge of anatomy at all equal to the wants of the surgeon; for they in no degree can supply the place of actual dissection and ocular inspection of parts, whilst at the same time they too frequently convey erroneous notions of structure. Hence it is pretty generally allowed, that an entire novice makes a more rapid progress in the acquisition of anatomical knowledge, than he who has *prepared* himself by much previous *reading* on the subject.

With regard to the execution of the plates, this, as might be expected in so great an undertaking, is very unequal. In many of them the objects are exceedingly well depicted, and the effect much heightened by the colouring occasionally given to the muscular and vascular parts. Others, however, are so confused and obscured by the figures of reference, that it is often difficult to refer from the description to the tables.

The original plates are comparatively few in number; the whole-length representation, however, of the absorbents, as large as life, taken from a subject in the collection of Dr. *Monro*, deserves particular mention.

ART. LXVI. *Some Account of the poisonous and injurious Honey of North America.* By BENJAMIN SMITH BARTON, *M. D.* 4to. 20 pages.

FOR the following account of an interesting subject, we are indebted to the *New York Medical Repository*, Vol. V.

Honey,

Honey, being a vegetable ſecretion, generally poſſeſſes ſomewhat of the flavour and other qualities of the plant which affords it. This nectareous juice, which is moſtly, in cultivated countries, ſo agreeable to the taſte, and ſo friendly to the conſtitution of man, is not *always* diſtinguiſhed by thoſe palatable and nutritive properties. It ſometimes operates as a cathartic, when freely eaten; and in ſome perſons of unuſual idioſyncraſies it has been known to excite great uneaſineſs, and violent griping pains. But theſe are not the noxious conſequences reſulting from the reception of honey into the ſtomach, treated of in this memoir.

In South Carolina, Georgia, and Eaſt Florida, it ſeems, more accidents have happened from eating poiſonous honey, than in any other parts of North America. This liquid is generally collected by the *wild* bees—the deſcendants of the ſwarms of the *apis domeſtica,* firſt carried there by the Spaniards. A preſumption naturally aroſe, that in the flowery ranges and ſavannas, where the wild honey of this region was prepared and collected, there muſt be more wild plants imparting to it injurious qualities, than grow on arable land, or in places leſs favourable to the vegetative functions of thoſe ſpecies. Upon inveſtigating the ſubject, this is found to be the fact. The plants affording poiſonous nectareous ſecretion are, 1. The *kalmia anguſtifolia,* or dwarf-laurel, concerning which Dr. Barton relates the following occurrence:

'About twenty years ſince, a party of young men, ſolicited by the proſpect of gain, moved, with a few hives of bees, from Pennſylvania into the Jerſeys. They were induced to believe that the ſavannas of this latter country were very favourable to the increaſe of their bees, and, conſequently, to the making of honey. They accordingly placed their hives in the midſt of theſe ſavannas, which were finely painted with the flowers of the *kalmia anguſtifolia.* The bees

bees increaſed prodigiouſly, and it was evident that the principal part of the honey which they made was obtained from the flowers of the plant which I have juſt mentioned. I cannot learn that there was any thing uncommon in the appearance of the honey; but all the adventurers who ate of it became intoxicated to a great degree. From this experiment they were ſenſible that it would not be prudent to ſell their honey; but, unwilling to loſe all their labour, they made the honey into the drink well known by the name of metheglin, ſuppoſing that the intoxicating quality which had reſided in the honey would be loſt in the metheglin. In this reſpect, however, they were miſtaken. The drink alſo intoxicated them, after which they removed their hives.'

2. *Kalmia latifolia*, or great laurel, one of the moſt beautiful flowering ſhrubs of the American woods, growing plentifully in the middle and northern ſtates. 3. *Kalmia hirſuta*, a pretty little ſhrub, growing in the ſouthern ſtates. 4. *Andromeda mariana*, or broad-leaved moorwort. As theſe are very plentiful in many of the American foreſts, their bloſſoms afford much honey for the wild bees.

Dr. B. further thinks it will be found, that other plants yield unwholeſome honey:—ſuch as, 1. *Rhododendron maximum*, or Pennſylvania mountain laurel. 2. *Azalea nudiflora*, or wild honeyſuckle. 3. *Datura ſtramonium*, or ſtinkweed. But on theſe further obſervations ought to be made.

The learned author next quotes from the ancients the information left concerning poiſonous honey by Dioſcorides, Pliny, Xenophon, and Diodorus Siculus; and, by the aſſiſtance of Tournefort, and his own excellent botanical judgment, endeavours to aſcertain from what plants it was collected. He then ſhews, by references to the Georgics of Virgil, that there is claſſical authority to ſhew that the Romans had an idea of the hurtful qualities of ſeveral plants to bees.

The

The ſymptoms produced by eating deleterious honey are thus deſcribed:

'The honey which I call deleterious, or poiſonous honey, produces, as far as I have learned, the following ſymptoms or effects: viz. in the beginning, a dimneſs of ſight, or vertigo, ſucceeded by a delirium,* which is ſometimes mild and pleaſant, and ſometimes ferocious; ebriety, pain in the ſtomach and inteſtines, convulſions, profuſe perſpiration, foaming at the mouth, vomiting, and purging; and, in a few inſtances, death. In ſome perſons, a vomiting is the firſt effect of the poiſon. When this is the caſe, it is probable that the perſons ſuffer much leſs from the honey than when no vomiting is induced. Sometimes the honey has been obſerved to produce a temporary palſy of the limbs; an effect which I have remarked in animals that have eaten of one of thoſe very vegetables† from whoſe flowers the bees obtained a pernicious honey.

'Death is very ſeldom the conſequence of the eating of this kind of honey.‡ The violent impreſſion which it makes upon the ſtomach and inteſtines often induces an early vomiting or purging, which are both favourable to the ſpeedy recovery of the ſufferer. The fever which it excites is frequently relieved, in a ſhort time, by the profuſe perſpiration, and, perhaps, by the foaming at the mouth. I may add, that as the human conſtitution reſiſts, to an aſtoniſhing degree, the effects of the narcotic and other poiſonous vege-

* 'An intelligent friend of mine related to me the caſe of a perſon who, for a ſhort time, was ſeverely affected from the eating of wild honey, in Virginia. He imagined that a perſon ſeized him rudely by one arm, and then by the other. After this he fell into convulſions, from which, however, he recovered in about an hour. It was imagined that this honey was obtained from a kind of poiſonous muſhroom.'

† 'The kalmia latifolia.'

‡ 'We ſhall afterwards ſee that not one of Xenophon's men died from the deleterious honey which they had eaten, in large quantities, on the ſhores of the Euxine ſea.'

tables

tables that are beſt known to us, ſo we need not wonder that it alſo reſiſts the effects of the deleterious honey which is procured from ſuch vegetables.

'It deſerves to be mentioned, that the honey which is formed by two different hives of bees in the ſame tree, or at a little diſtance from each other, often poſſeſſes the moſt oppoſite properties. Nay, the honey from the ſame individual comb is ſometimes not leſs different in taſte, in colour, and in its effects. Thus one ſtratum or portion of it may be eaten without the leaſt inconvenience, whilſt that which is immediately adjacent to it ſhall occaſion the ſeveral effects which I have juſt enumerated.'

The noxious plants of our farms, gardens, fields, and foreſts, are all of them worthy of being known; as well they that are directly and diguſtingly venomous, as thoſe which poiſon under the diſguiſe of ſweetneſs and innocence. The practical inferences to be derived from Dr. B.'s inquiries on this ſubject are, that the four firſt mentioned plants, *known to furniſh* unwholeſome honey, ſhould be extirpated in the neighbourhood of apiaries; that the honey procured from the three, enumerated in the ſecond place *as ſuſpicious*, ſhould be carefully examined to ſettle the fact with regard to them; and that obſervations be made on other plants—ſuch, for example, as tobacco, poppies, and buckwheat; with the view of aſcertaining the preciſe qualities which the nectareous ſecretion of theſe reſpectively poſſeſſes. By becoming thus acquainted with the plants affording injurious honey, and being taught to avoid them, we ſhall have taken an important ſtep towards the further knowledge of thoſe from which good and well flavoured honey is procured. We ſhould be glad to ſee a liſt of ſuch indigenous vegetables, arranged in the order of their excellence, from clover, or whatever other plant affords the moſt excellent honey, to that which furniſhes the pooreſt, ſhort of actual noxiouſneſs. And, from

from a hint dropped by the author, we are led to hope he will one day give us ſuch a catalogue.

'Tantus amor florum, et generandi gloria mellis.'

Art. LXVII. *The Modern Practice of Phyſic, which points out the Characters, Cauſes, Symptoms, Prognoſtic, morbid Appearances, and improved Method of treating the Diſeaſes of all Climates. By* Robert Thomas, *M. D.* In 2 vols. 8vo. 936 pages, price 17s. London, 1801. Murray and Highley.

IN compilations of this ſort, it is ſufficient, that, in addition to a clear and methodical arrangement, due diligence be employed in collecting from the proper ſources, and judgment in diſcriminating between real and pretended diſcoveries in the ſcience. In theſe reſpects we think the author of the preſent work has not been deficient. Beſides a deſcription of the ſymptoms, cauſes, and treatment of the different diſeaſes, the new remedies which have been lately introduced are noticed, and an eſtimate of their real virtues attempted. The peculiarities ariſing from climate are pointed out, and the means of deſtroying contagion explained. A great variety of formulæ are ſubjoined, adapted to different circumſtances; with ſome obſervations on mineral waters, and on warm and cold bathing. The diſorders peculiar to females and infants are ſeparately treated. To the whole are annexed copious indexes of diſeaſes and remedies, with a table of the new names introduced in the laſt edition of the Pharmacopœia of the college, and another of the quantities of mercury and opium contained in the ordinary officinal compounds.

Such

Such is the general nature of the work before us. We cannot better characterize it than by saying, it is what *Brookes*'s Practice of Physic, the *London Practice of Physic*, and others of a similar description, were each in their time;—a compendium of the existing doctrines and practice of medicine.

ART. LXVIII. *De Nosologia Brutorum cum Hominum Morbis Comparata. Auctore* ERNESTO LUDOVICO WILHELMO NEBEL, *M. D. et Prof. Pub. Giessæ.* 8vo. 80 pages, price 2*s* 6d. Imported by T. BOOSEY, London, 1801.

NOT in mental powers only, but in bodily structure, man differs from the rest of the animal creation. To each class is assigned a peculiarity of form and of structure, which serves to distinguish it from the rest of animated nature. In no two of these classes are found an exactly similar condition of muscles, of nerves, of bone, of vessels, or of viscera. From the meanest worm to the elephant, and the ape that approaches so nearly to the human structure, a gradually ascending scale exists, where the individuals resemble each other only in the possession of the common attributes of life. It is natural, therefore, to imagine that peculiar diseases take place in peculiar tribes, from natural and original differences, as well as peculiarities in modes of life, and a thousand extrinsic and accidental circumstances.

In the opinion of the celebrated Haller, the study of *comparative* anatomy conduces more to the illustration of the various functions of the human machine than that of the human subject itself; and it is easy to conceive that a diligent contemplation of the structure and functions of animals, in the diseased state, may throw much light on the pathology of the human body.

body. In the work before us, the ingenious and learned author treats of the diseases of the brute creation, as far as they have any relation to human nosology. In dissenting from the opinion of *Stahl*, who asserted that fevers did not take place in the inferior animal tribes, from their defect of mental passions and emotions, the author takes occasion to prove that brutes are not wholly wanting in the most important of the mental functions: these, however, are not so perfectly possessed as to render them liable to the various diseases which we term mental, and which constitute so large a portion of the afflictions of human life. Brutes neither anticipate future ills by foresight, nor suffer by imaginary conceits. From stupor, delirium, melancholy, mania, and the various other ills producible by excessive mental exertion, they are wholly, or in great measure, exempt.

In a state of nature, brutes are probably subject to few or no diseases but what naturally arise from vicissitudes of season and external injury. When rendered the companions of man, constrained to live an artificial life, and corrupted, like him, by luxury and indulgence, they become liable to a host of maladies, that impair their natural powers, and abridge the term of their existence.

From the erect posture in man, he becomes subject to numerous accidents and diseases, from which the brute is in a great measure exempt. Hence ensue luxations, herniæ, prolapsus, oedema, varices, contortions of the limbs, &c. But, on the other hand, quadrupeds are, in a peculiar degree, obnoxious to maladies of no small importance; such as anthrax, particularly of the mouth, apostems, hydrothorax, worms in the cavities of the head, breast, and stomach, rheumatic affections of the joints, lameness, vertigo, &c.

The diseases to which domesticated animals are subject are next treated of, under the three following general divisions: first, *Epizootic Maladies*, or such as

rage

rage epidemically: 2. Cutaneous Diſeaſes: and, 3. Fevers, ſtrictly ſo called, to which animals are ſuppoſed obnoxious, in common with man. But the author is probably too hypothetical in ſuppoſing (p. 60), that fevers in cattle are, more than in man, acute, on account of the greater ſpiſſitude of their fluids, and the deficiency of ſerum. A number of judicious obſervations, however, will be found, tending to throw light on the diagnoſis of brute diſeaſes; and an ample citation of antient and modern writers on the ſubject.

Reſpecting the means of cure, the author is very brief; properly ſpeaking, indeed, theſe made no part of his plan. How far he is right in his ideas of the poiſonous effect of butter-milk, vinegar, and other acids, on horſes, ſheep, and pigs, whilſt the ſame ſubſtances prove ſalutary to cattle,* we muſt leave to the veterinary practitioner to determine. It is hardly ſafe to reaſon *à priori* in thoſe matters.

ART. LXIX. *The Anatomiſts' Vade-Mecum. Containing the Anatomy, Phyſiology, Morbid Appearances, &c. of the Human Body; the Art of making Preparations, &c. The 4th Edition, reviſed and enlarged. By* ROBERT HOOPER, *M. D. F. L. S. &c.* Small 8vo. 322 pages, price 7s. London; 1802. MURRAY & HIGHLEY.

THE firſt edition of this uſeful little work was noticed in a former volume of our Review.† Of the preſent it is only neceſſary to obſerve, that its bulk is very conſiderably enlarged, and its utility enhanced, by the deſcription of the morbid appearances, ſubjoined to the anatomy and phyſiology of each part, and the directions for making anatomical preparations.

* Acetum et lac ebutyratum equis toxica ſunt. Ideo cryſtallos tartari nemo profecto præſcribat. Ovibus quoque obſunt; porcis ſeu porcellis viroſa eveniunt; bobus autem febre laborantibus ſalutaria exiſtimantur. P. 72, note.

† Vol. iv. p. 563.

Art. LXX. *Practical Obſervations on the Nature and Treatment of ſome exaſperated Symptoms of the Venereal Diſeaſe.* By Edward Geoghegan, *Member of the Royal College of Surgeons, and Surgeon to the Dublin General Diſpenſary.* 12mo. 75 pages, price 3*s*. London, 1801. Hughes, &c.

THE particular affection here conſidered is *phymoſis*, which, as well as the other ſymptoms of the venereal diſeaſe, according to the author's obſervation and that of his profeſſional friends, aſſumed appearances of uncommon virulence in the year 1799. The appearances which gave riſe to theſe remarks were, violent tumefaction of the penis, often terminating in gangrene, particularly when injudiciouſly treated; other ſymptoms were alſo obſervable, ſingular for intenſity of degree. This peculiarity in the ſymptoms of the venereal diſeaſe, the author attributes to the peculiar unfavourable ſeaſons which then ſucceeded each other; a cauſe which probably influences, in a conſiderable degree, the greater number of prevailing diſeaſes, and eſpecially ſuch as rage epidemically.

The juſtice of the following remarks will ſcarcely be queſtioned. 'The ſummer, autumn, and winter of 1799,' the author obſerves, 'furniſh ample and melancholy proofs of the exiſtence of a cauſe ſufficient to derange the animal machine; a ſeaſon ſo unpropitious as to encreaſe the maſs of human miſery in theſe countries to a degree afflicting and awful indeed. The order of the phyſical world would be inverted, were not diſeaſes influenced by that ſtate of the weather which proved ſo univerſally deſtructive to vegetation. From the 27th of June to the 17th of November, there were only eight days free from rain, nearly five months: although it does not appear that the prevalence of any particular epidemic was marked,

marked, yet the ordinary diſeaſes of every claſs were evidently encreaſed in number and degree: remarkably obſtinate rheumatiſms were very prevalent here and in England; alſo dyſenteries, ophthalmia, and meaſles of a very bad kind—the natural conſequence of piercing winds acting on our bodies, now and then expoſed to hot ſunſhine. We are informed through the Medical and Phyſical Journal, that ſo general and fatal was the typhus fever in London, that ſome places were nearly depopulated, and that the mortality was double what it had been at former periods. It may not be unworthy notice, that diſeaſe raged very generally among horſes in this country during that year; and it is a fact, that, at the time of epidemics, a great mortality has almoſt always been obſerved among thoſe and other animals.

'The inflammation of the penis is admitted to be eryſipelatous; and we know that eryſipelas is a frequent attendant upon epidemic cauſes. So numerous are the ſubjects of the venereal diſeaſe, that ſurely when diſeaſes ariſe evidently from the ſtate of the atmoſphere, many venereal patients muſt be attacked, and they will be affected as before explained: thoſe parts will be inflamed which were previouſly in a morbid ſtate. In this way I would account for the exaſperated ſymptoms which were ſo frequent in the year 1799. I was informed by Mr. Henthorn, one of the ſurgeons of the Lock Hoſpital, that an extraordinary number of caſes of exaſperated ſymptoms preſented there at that time; but that they put on the putrid type, particularly among females. Mortifications were very general, and ſet in early, and often proved fatal.'

But although the deſcription above given indicates ſufficiently the malign nature of the ſymptoms; in the caſes that fell under the author's own obſervation, they aſſumed a highly inflammatory form, and were relieved by immediate and plentiful evacuations. The

 diſpoſition

diſpoſition to mortification, the author thinks, may eaſily be referred to the confinement and bad air of an hoſpital, and other ſimilar cauſes.

If the occaſional malignity of ſymptoms be with juſtice attributable to an epidemical conſtitution of the air, or other general phyſical cauſes, it is a matter of great practical moment that it be not aſſigned to a wrong cauſe, viz. a more virulent ſtate of the venereal poiſon; for this would lead to a freer uſe of mercury, a practice that, in ſuch caſes, ſeldom fails to be injurious, and to aggravate all the ſymptoms. This was particularly remarked by Mr. Hunter, and is properly inſiſted upon in the preſent eſſay.

'The general practice of commencing with mercury,' the author obſerves, 'the moment phymoſis appears, or even chancres, is often productive of the greateſt miſchief; not only the general conſtitution, but its particular ſtate at the inſtant, ought to be weighed maturely. We every day ſee mercury prove noxious in venereal caſes inſtead of medicinal, and in the ſame ſubject for the ſame complaint. At another period, it will prove ſucceſsful. This fact evinces, that mercury, although a certain antidote to the diſeaſe, requires a certain ſtate of conſtitution to exiſt, that it may produce medicinal effects. What that ſtate is, it may not be eaſy to explain: it would occur to me to be neceſſary that the venereal irritation ſhould be paramount; for I can conceive, that if what is termed the phlogiſtic diatheſis prevailed, which is conſtantly produced by cold, or the ſcrophula, and the venereal diſeaſe in the habit, that mercury would not cure the latter, whilſt the former remained active: hence its injurious effects where venereal ſymptoms are attended with great inflammation, and the difficulty of curing ſcrophulous patients. The ſame rationale applies to other conditions of the body prevailing in venereal caſes to which mercury is unfriendly.

friendly. After the acceſſary diſeaſe has ſubſided, and that the venereal alone exiſts, then the mercurial irritation becomes ſalutary. With reſpect to the treatment of phymoſis and phagedenic chancre, I would lay it down as an axiom, that the venereal action ſhould not be held in view, but that they ſhould be conſidered as acceſſary diſeaſes; and in all caſes where an acceſſary diſeaſe takes place, it ſhould be removed previous to attempting the cure of the original. Where pneumonia, violent catarrh, or any other diſeaſe ſupervene, the mode of cure in ſuch diſeaſes would be purſued, but no mercury, until after they had been removed; yet it is but too generally the practice, when the local ſymptoms of the venereal diſeaſe appear aggravated, to attribute all to the poiſon, and, prima facie, to pour in the antidote from which the moſt dreadful conſequences are ariſing every hour: in phymoſis, immediate mortification; in chancre, a ſloughing; and, in both, the deſtruction of part, or of the entire penis.'

It appears to us that the author, in the practice here recommended, falls from one extreme to the oppoſite; and we much doubt whether he would ever effect a cure if he waited the entire removal of the acceſſory ſymptoms, before he entered on the uſe of mercury. The directions given by Mr. Hunter on this difficult point, and which are here quoted for the purpoſe of being conteſted, appear to us the reſult of true practical obſervation. "In thoſe caſes," Mr. *H.* obſerves, "where violent inflammation has "attacked the ſeat of a chancre, producing phymoſis "as before deſcribed, and often ſo as to threaten mor"tification, a queſtion naturally ariſes—Is mercury to "be given freely? Nothing but experience can deter"mine this: I ſhould incline to believe, that it is ne"ceſſary that mercury ſhould be given; for I am "afraid our powers to correct ſuch a conſtitution, "whilſt the firſt cauſe ſubſiſts, are too weak: how-

" ever, on the other hand, I believe the mercury
" ſhould be given ſparingly, for it aſſiſts in diſpoſing
" the conſtitution to ſuch ſymptoms: we are gaining
" nothing but may loſe by its uſe. I therefore do ſup-
" poſe that ſuch medicines as may be thought neceſ-
" ſary for the conſtitution ſhould be given liberally:
" as well as the ſpecific, bark is the medicine that pro-
" baby will be of moſt general uſe; opium, in moſt
" caſes of this kind, will alſo be of ſingular ſervice;
" the bark ſhould be given in large quantities, and
" along with it mercury, whilſt the virus is ſtill ſup-
" poſed to exiſt; or, if the inflammation has ariſen
" early in the diſeaſe, they may then be given toge-
" ther, ſo as to counteract both diſeaſes, and not to
" allow the inflammation to come to ſo great a height
" as it would otherwiſe do if mercury was given at
" firſt alone. This inflammation may be ſo great in
" many caſes, or be ſo predominant, that mercury
" may increaſe the diſpoſition, and therefore become
" hurtful. Where this may be ſuppoſed to be the
" caſe, bark muſt be given alone."

Although ſome ſlight traces of contradiction may be ſeen in the paragraph quoted above from Mr. Hunter, its general tendency is ſufficiently apparent. His opinion is manifeſtly in favour of the cautious uſe of mercury; and he appears to put the caſe of ſuch a degree of inflammation ſometimes taking place as to abſolutely forbid its employment, hypothetically, rather than from actual obſervation. *In medio tutiſſimus ibis.*

No part of the practice recommended by Mr. Hunter appears to coincide with the views of the author. Conſidering phymoſis as inflammation of the moſt active kind, he adviſes the free uſe of evacuations, eſpecially blood-letting, general as well as local (not immediately from the inflamed ſurface). But although in the adoption of this practice he ſhields himſelf under the example of *Wiſeman*, *Aſtruc*, and other practitioners

titioners of the laſt age, as well as the generality of French ſurgeons of the preſent day, it is certain that eryſipelatous inflammation, as it now occurs, is in many caſes moſt ſucceſsfully combated by bark, and medicines of a ſimilar deſcription: of this, practitioners in the metropolis are well aware. But poſſibly the diſeaſe may differ in Dublin and in London.

ART. LXXI. *New Inventions and Directions for Ruptured Perſons, teaching them the Art of effectually keeping up Inguinal and Scrotal Ruptures. By* W. H. T. *Eſq. To which is prefixed a Recommendatory Letter. By* W. BLAIR, *A.M. F.M.S. &c. &c.* Second edition, with additions. 8vo. 51 pages, price 2*s.* London, 1802. CALLOW.

THE directions here given reſpecting the conſtruction and application of truſſes, in the inguinal and ſcrotal hernia, claim the attention of all thoſe afflicted with thoſe troubleſome and frequently dangerous complaints. Should the improvement ſuggeſted be productive of the utility expected, which varied experience only can confirm, but which, from the ſtatement here given, there appears no reaſon to doubt, the author will deſerve the acknowledgments of a large portion of mankind. The imperfection and inſufficiency, in many caſes, of the inſtruments at preſent in uſe, are too well known.

It will not be eaſy to convey a perfect idea of the improvements recommended, without the aid of the plate, or an inſpection of the truſs itſelf: the chief alterations ſuggeſted, however, are the following.

In the common ſteel truſs, the ſpiral hoop is carried around the pelvis, in a line ſeveral inches higher than the pad of the inſtrument; by the oblique action of which, a ſmall degree of preſſure only is made on the abdominal ring. Inſtead of which, the ſpring hoop is directed

directed to be of a circular form, and placed ſo low on the pelvis, or rather hips, that the hind part of the hoop is as low down as the fiſſure, or diviſion of the poſteriors: the ſides lie immediately above the great trochanters of the thigh bone, whilſt the pad lies directly on the abdominal ring. By this means, the author obſerves, the truſs is removed from a painful, galling, moveable ſituation, to an eaſy, comfortable, and immoveable one.

An improvement in the cuſhion is likewiſe ſuggeſted, in the following terms. 'Cut or tear a ſlip of coarſe calicoe*, about twelve inches in length. Form it into a ſquare, of a ſize that it will project a quarter of an inch round the edges of the pad of the truſs, except that end next the thigh, but having no projection beyond the neck of the pad; the rough edges are to be upwards and downwards: then tightly fold over the firſt ſlip many others. For a grown perſon, the thickneſs ſhould be about three quarters of an inch: there is more danger of forming this cuſhion too thin than too thick; its thickneſs or thinneſs muſt depend on the ſize of the patient. When the hollow in the groin is completely filled up by it, and it remains immoveable under the pad of the truſs, it is then of a proper ſize.

'This calico cuſhion is to be worn under the pads of the truſs; the outer ſlip or two of which may be changed at pleaſure, for the purpoſe of cleanlineſs, or reſtoring the cuſhion to a proper degree of thickneſs. This cuſhion, judiciouſly made, will, even with a bad truſs, moſt materially aſſiſt in keeping up a reducible rupture; and, with a truſs made and uſed according to the directions of the author, aided by his other improvements, will render the deſcent of a reducible rupture impoſſible. Where the omentum is not reducible, the application of this cuſhion is

* About 1s or 14d per yard.

much

much preferable to the uſual mode, by affording it protection from the injuries of preſſure.

'Its various and beneficial properties are immenſe, and would appear wonderful, if not explained.

'Firſt, It protects the ſpermatic veſſels from being injured by the hard pad of the truſs, which injury often produces hydrocele, inflammation of the ſpermatic veſſels, hernia humoralis, &c.

'Secondly, By protecting the ſpermatic veſſels from the injuries of preſſure, it produces a deſideratum never before obtained. It enables the patient to girt the truſs round the body with ſuch an effective degree of tightneſs, that the rupture cannot deſcend.

'Thirdly, By uniting the properties of ſoftneſs and ſolidity, it yields to the form of the abdomen; and thus completely fills up the aperture or ring in the abdominal muſcles, through which the rupture deſcends.

'Fourthly, It is an additional column of preſſure; and the truſs, being tighly faſtened, keeps the omentum and inteſtines, all round and above the aperture, in ſuch a ſtate of quietude, that it leſſens their power in deſcent, and they are, therefore, leſs likely to protrude; on the plain mechanical poſition, that the ſmaller degree of force with which a body moves, the ſmaller force it poſſeſſes at the end of its action.

'Fifthly, It elevates the pad part of the truſs to the line of elaſtic action with the hoop part, and thereby preſerves and enforces its elaſticity, retaining the truſs in a ſtate of permanent effect.

'Laſtly, On the tight application of this cuſhion, the patient is alſo relieved from all rumbling pains ariſing from the internal and partial deſcent of the rupture; and from its combined qualities we accompliſh the moſt difficult attainments, being enabled to inflict preſſure on ſubſtances naturally too tender to bear preſſure, and thereby enforce a ſyſtem of *immoveability*;

moveability; without the adoption of which, the uſe of all truſſes are inefficacious.

'It is neceſſary to add, that neither fine, old, nor waſhed linen, will have the deſired effect; and a cuſhion after uſe, having acquired its form, is better than a new one. Its edges ſhould be occaſionally clipped, and the cuſhion ſhould be formed of *ſeparate* ſlips, as before directed, to be folded over each other.'

To enſure greater ſteadineſs, and more complete preſſure of the pad, ſtraps are recommended to be paſſed between the thighs, from before backwards. A much greater degree of preſſure is adviſed than is commonly practiſed: 'tightneſs of girthing,' the author obſerves, 'decreaſes, rather than cauſes the galling, by leſſening friction.'

Specimens of the truſs and cuſhion, we are informed, may be ſeen at *J. Callow*'s, Bookſeller, Crown Court, Soho; at *Hurſt*'s, Paternoſter Row; and at *Hatchard*'s, Piccadilly; whence thoſe that deſire it will be referred to a truſs-maker of ability, who is acquainted with the author's inventions and directions.

It is right to ſtate, that the author's ſituation in life places him above all ſuſpicion of being influenced, on the preſent occaſion, by intereſted or unworthy motives.

ART. LXXII. ANDREÆ COMPARETTI *in Gymnaſio Patavino* P. P. P. *Obſervationes Dioptricæ et Anatomicæ Comparatæ, de Coloribus Apparentibus; Viſu et Oculo.* 4to. 112 pages, with one plate. Patavii, 1798.

M. COMPARETTI, a celebrated Italian anatomiſt, is already diſtinguiſhed by his work *On the Structure of the internal Ear:* the preſent treatiſe

tiſe is not leſs intereſting. His obſervations on the ſubject have two principal objects; namely, certain irregularities of viſion, and the ſtructure of the eye in different claſſes of animals.

The remarks on the former head, which will appear the moſt novel to phyſiologiſts, tend to prove, that the eye is not, in all circumſtances, completely achromatic, as commonly believed; but that the images of objects are ſometimes bordered by an iris, like thoſe produced by certain optical glaſſes. If, for example, we trace a ſtrait black line on white paper, and place it at a certain diſtance from the eye, and it be regarded obliquely, and with ſome degree of effort, the ſtrait line appears enlarged, becomes more clear, and a yellow and an indigo line are obſervable, parallel and contiguous to the former. This phenomenon is ſtill more perceptible, if two parallel black lines, at a little diſtance the one from the other, are obſerved in the ſame manner. The degree of obliquity and diſtance are only to be found on trial, as they differ in different obſervers.

If we cover with a ruler one third of the eye, towards the inner angle, and look at an opaque band traced on a tranſparent ground, ſuch as the frame of a window, one of the ſides will appear bordered with yellow, and the other with blue. On placing the ruler on the oppoſite ſide of the eye, the accidental colours will aſſume the reverſe order.

When we ſhut one eye, the pupil of that which remains open becomes larger, without any diminution in the object looked at.

In the ſecond claſs of obſervations, M. *Comparetti* examines, firſt, the external parts of the eye in man; and deſcribes the connexions and effects of its muſcles with more care and minuteneſs than has been hitherto done. Neglecting thoſe parts in the larger animals, where they have been ſufficiently ſtudied, he occupies

occupies himfelf with their examination in the fmaller tribes. He then proceeds to the examination of the globe itfelf, in man and various other animals. The whole is terminated by interefting phyfiological deductions.

The author compares his own experiments on the occafional colours with thofe of *Buffon*, *Jurin*, and *Porterfield:* he believes that diftinct vifion only takes place in the points fituated in the prolongation of the axis of the eye; and that when we fancy we fee different objects at once, this happens in confequence of the movement which takes place in the eye towards each of thofe points, and from the duration of the impreffion made on the retina, as happens in other well known inftances.

He fuppofes the ciliary proceffes to poffefs a power of movement, not abfolutely mufcular, but of a nature fimilar to that of the iris; and this power, he thinks, may act on the cryftalline lens, fo as to move it either parallel with itfelf, or obliquely, according as the ciliary proceffes act altogether or partially. He attributes many important effects to the difplacement of the cryftalline thus produced: by its obliquity, he explains the accidental colours, arifing from the efforts the eye makes to fee objects much out of the line of its natural axis.

As, according to the author, there is only one pofition of the cryftalline which is perfectly achromatic, and which refers to the fame point in the retina, the rays coming from any white point without the eye; he explains the accidental colours produced on looking on a white furface after having fteadily contemplated, for a confiderable time, a coloured fpot, by fuppofing that the cryftalline, which was fo placed as to unite on the retina the rays only of the colour of the fpot looked at, is fome time before it returns to the point where it could re-unite the rays of all the colours, and confequently produce a white image.

This

This explanation appears leſs ſatisfactory than that of *Boſcowich*, adopted latterly by *Darwin*; and which ſuppoſes the retina to be leſs ſenſible to rays, to which it has been for ſome time expoſed, than to others; and that the firſt make no part of the total effect produced.

Art. LXXIII. *Synoptic Tables of Chemiſtry, intended to ſerve as a Summary of the Lectures delivered on that Science in the public Schools at Paris. By* A. F. Fourcroy, *of the National Inſtitute, &c. Tranſlated from the original French, by* William Nicholson. Large Folio. Price 1*l.* 1*s.* Cadell and Davies. 1801.

THE work before us is intended as a ſupplement or continuation of the *Philoſophy of Chemiſtry*, publiſhed by the ſame author a few years back. Of this, the aim was, to preſent, in the form of axioms, and as primitive and fundamental truths, the moſt general facts of the ſcience. The preſent *Tables* contain the properties of bodies in particular, and afford an application of the general principles, or of the philoſophy of the ſcience, to the ſtudy of the productions of nature and of art in detail.

The firſt *Table* conſiders the generalities of the ſcience, and its diviſions, as directed to different purpoſes. The ſecond contains the undecompoſed ſubſtances, and the ſame bodies when burnt, or united with oxygen. Of the firſt kind are *light*, *caloric*, *oxygen*, and *azote*, arranged in the order of their general diſperſion or abundance; and *hydrogene*, *carbone*, *phoſphorus*, the *diamond*, and the *metals*, in the order of their combuſtibility. The ſecond claſs, the burned bodies, or bodies combined with oxygen, viz. the ſeries of oxyds and acids, are arranged according

cording to their affinity to the burning principle, and the difficulty of decompoſing them. Water, in this ſeries, is the oxyde of hydrogene: arſenic, tungſtein, molybdæna, and chrome, are the metallic acids particularly mentioned.

The third Table contains, firſt, the earths and alkalies. The moſt decidedly earthy bodies are placed firſt, and then thoſe which approach to an alkaline nature. Thus ſilex, alumine, glucine, and zircone, as true earths, are followed by magneſia and lime, which are conſidered as ſub-alkaline earths. Barytes, potaſh, ſoda, ſtrontian, and ammonia, rank as alkalies. In the remainder of the third, in the fourth and fifth Tables, are the *ſalts*, claſſed according to their moſt diſtinguiſhed chemical qualities.

The ſixth Table exhibits the general properties of metallic ſubſtances. The ſeventh, eighth, ninth, and tenth, give an account of particular metals, with regard to their various phyſical and chemical properties.

The two laſt tables relate to vegetable and animal chemiſtry.

A tranſlation, by the ſame hand, of M. *Fourcroy*'s laſt great work on chemiſtry, *Syſteme des Connoiſances Chymiques*, is ſhortly expected.

Art. LXXIV. *Nouveaux Elemens de Phyſiologie: New Elements of Phyſiology; by* Ant. Richerand, *one of the Surgeons in Chief to the Hoſpital of the North, Profeſſor of Anatomy, &c.* 8vo. 700 pages, price 6 fr. Paris, 1801.

PHYSIOLOGY, which owes ſo much to the labours of *Haller*, has, ſince his time, engaged the attention of a great number of philoſophers, who have

have inveſtigated with diligence different parts or the whole of the animal œconomy; the reſult has been, many important diſcoveries, which have led to concluſions, often different to thoſe of *Haller*, and more illuſtrative of the living actions. In the work before us, M. *Richerand* gives a compendium of the ſcience of phyſiology, embracing the diſcoveries of modern philoſophers, and enriched, at the ſame time, by a conſiderable number of original facts and remarks, the fruits of his own reſearches on the ſubject.

In the introduction, the author treats generally of the vital power, and the animal œconomy, both in health and in diſeaſe. The opinions of different writers, as deduced from experiment and obſervation, are examined, and confirmed or refuted, as they appear conſonant to truth or otherwiſe. The relation of phyſiology to the ſciences that have more or leſs affinity with it is pointed out, and the utility of the application of theſe to the ſolution of the problems of animal organization ſhewn. The introduction is terminated by ſome obſervations on the uſes of the great ſympathetic nerves.

In the diviſion of his work, M. *Richerand* conſiders, firſt, man individually, or in reſpect to himſelf only, explaining the functions which concur towards his preſervation. Of theſe, ſome act by aſſimilating to the ſubſtance of the body the matters, or aliment, proper to each individual: the aſſimilatory functions are,

1. *Digeſtion*, which ſerves to extract the nutritive parts from the food taken in.

2. *Abſorption*, by which theſe particles are taken up, and carried into the general maſs of fluids.

3. The *Circulation*, which ſerves to diſtribute them to the different organs of the body.

4. *Reſpiration*, by which they become combined with the oxygene of the atmoſphere.

 5. The

5. The *Secretions*, by which they undergo various preparations and changes: and,

6. *Nutrition*, by which they are applied to the various organs, of which they effect the growth, and repair the daily waſte.

Theſe functions are all deſignated by the general term *aſſimilatory*, which indicates ſufficiently their common deſtination. The author gives the name of *relative*, to thoſe functions which tend to the preſervation of the individual, but which have a relation to the ſurrounding beings. Theſe are,

1. *Senſations*, which advertiſe him of the preſence of ſurrounding bodies, by the intermedium of the organs of ſight, hearing, ſmelling, taſte, and touch; theſe excite the action of the nerves, and that of the brain, whence proceeds the human intellect. Having conſidered the organs of ſenſe in the ſtate of waking and activity, the author proceeds to treat of ſleep, of dreams, ſomnambulation, ſympathy, and the influence of habit, on the action of our organs.

2. *Motion*, by which we approach or avoid external objects.

3. The *voice* and *ſpeech*, which enable us to communicate with our fellow beings, without the neceſſity of changing place for the purpoſe.

M. *Richerand* then examines the functions which conduce to the preſervation of the ſpecies; as well thoſe which require the concourſe of the ſexes, as thoſe which appertain excluſively to the female. In the firſt order is included *generation*. Under this head are pointed out the general difference of ſtructure in the ſexes; the hermaphrodite ſtate, and the different ſyſtems of generation that have been propoſed, are here noticed.

The ſecond order embraces *geſtation*, *child bearing*, and *ſuckling*; after the conſideration of which, the author follows man through the periods of growth and decay, accompanying him from the cradle to the tomb;

tomb; treating, in regular ſucceſſion, of the ſtates of *infancy*, *puberty*, *youth*, *manhood*, *old age*, and decrepitude. To this is ſubjoined the conſideration of temperaments, which he diſtinguiſhes into the *ſanguine*, *muſcular*, *bilious*, *melancholic*, *lymphatic*, and *nervous*; the different races of mankind are next noticed, four of which, after *Lacepede*, are diſtinguiſhed, viz. the European, the Negro, the Mongolian, and the Hyperborean.

In the developement of theſe various articles, the author avails himſelf of all the light which human and comparative anatomy, phyſics, mechanics, and modern chemiſtry, can afford him.

Art. LXXV. *Obſervations ſur la Maladie appellée Peſte, &c. Obſervations on the Diſeaſe termed* The Plague; *the Dyſenteric Flux; the Ophthalmy of Egypt, with the Means of preventing its Attack; and Remarks on the Yellow Fever of Cadiz; with Propoſals and a Plan for an Hoſpital for the Reception of epidemic and contagious Diſorders. By* Assalini, *M. D. one of the Chief Surgeons of the Conſular Guard, &c.* 12mo. 166 pages, with 3 plates, price 3 francs. Paris, 1801.

THE author of the work here noticed, accompanied the French army in its Egyptian expedition, and had an active part in the care of the ſick and wounded in the military hoſpitals of the republic. He will naturally, therefore, be ſuppoſed to have had many opportunities for making obſervations on the ſubjects above alluded to: the fruits of his inquiries are here preſented to the public. The facts he has witneſſed lead him to draw concluſions that differ widely from the opinions commonly entertained on

 theſe

thefe points, efpecially with regard to the fuppofed nature and caufes of the plague.

In the introduction, M. *Affalini* points out the circumftances which particularly affected the health of the foldiers after their debarkation at Alexandria. The extreme heat of the days; the cold damp of the nights; the exhalations from the lakes and marfhes; the quality of the food; fcarcity and a want of water during the march acrofs the defert plains of Alexandria towards Cairo; the imprudence of fleeping out of quarters, or in apartments expofed to currents of air from open windows: thefe are the caufes, to the combined action of which the author attributes the greater part of the ophthalmies and fluxes with which they were attacked. To this is fubjoined, an account of the climate of Egypt, characterifed by uncommon ferenity, fcarcely interrupted by a few fhowers in autumn. The year in this country is divifible into two feafons; for fix months the fky is clear and ferene, the other fix are obfcured by clouds; of the latter months, two are ftormy.

After thefe preliminaries, the author treats of the difeafes which afflicted the army of Egypt, the chief of which was, a diforder that attacked numerous individuals at the fame time, and the fymptoms of which were fever, buboes, carbuncles, proftration of ftrength, pain in the head, and delirium: it moft commonly carried off the fick about the third or fifth day. This difeafe, the author obferves, takes place, more or lefs, every year, along the coafts of the Mediterranean and Archipelago, from Alexandria to Conftantinople. To this affection the name of plague is commonly given; though the author, in order to leffen the terror which this epithet never fails to infpire, preferred calling it an epidemic fever.

Amongft the characteriftic fymptoms of this difeafe, he efpecially notices a fingular apathy, which leads the patient to wander into the moft fecluded places, abandoning

abandoning himſelf to ſleep, and becoming totally indifferent to every motive to action, till delirium ſeizes him, and ſoon carries him off. A conſiderable number of facts are adduced to prove, that the diſeaſe which attacked the French army in Egypt and Syria, and which, conſidered in its individual ſymptoms, bears the characters of that known under the denomination of the *plague*, conſidered collectively, was evidently epidemic, and not really contagious; and that the cauſes which gave it birth were of local origin, and not a germ imported from without.

With regard to the treatment, this is reduced to three chief indications: 1. the diminution of plethora, when it exiſts; 2. cleanſing the primæ viæ, if loaded; 3. exciting tranſpiration and ſweating. A principal remedy, which is recommended likewiſe as a preſervative, is, ſtrong coffee without ſugar, with the juice of a lemon in each cup, and taken five or ſix times in a day. Frictions with olive oil, as recommended by M. *Olivier*, are warmly recommended. The author obſerves, in general, that the tonic and ſudorific plan of treatment, adopted by many of the army phyſicians, conſtantly ſaved two thirds of the ſick, though moſt of them were affected with buboes. With reſpect to theſe laſt, the cortex was given internally, and frictions of oil applied to the tumours themſelves; and when ſigns of ſuppuration appeared, they were opened by the lancet.

Some remarks are added on the dyſentery which raged among the French troops in Italy, and on the ophthalmy of Egypt. The latter the author attributes principally to the cold night air, following the fatigues and exceſſive heats of the day, and the brightneſs of the ſunſhine. The floating particles of ſand, and the ſaline matters with which they are impregnated, are conſidered as ſecondary only in their operation.

Art. LXXVI. *Elemens de la Science Medicale, &c. The Elements of Medical Science, on the Principles taught in the School of Montpellier; a Work uſeful to Beginners, and to thoſe about to undergo their Examinations. By* J. B. Ph. Maurice, *Phyſician at Montpellier, &c. &c.* Paris, 1801.

THE author of the work before us makes a twofold diviſion of his ſubject; conſidering the animal œconomy as conſiſting of *tonic* and *digeſtive* powers. Theſe he examines in the ſtates of health and diſeaſe, and as influenced by climate, ſeaſon, age, and other circumſtances.

The *tonic* powers are thoſe of *condenſation,* and thoſe of *expanſion*; both eſſential to the proceſs of digeſtion, and to the whole œconomy of living bodies. The movement of *condenſation,* connected with the firſt period of digeſtion, is exerted from the circumference towards the center; that of *expanſion* takes place at the ſecond period of digeſtion, when the tonic movement is directed from the center to the circumference: by this the nutritious juices are carried and diſtributed to every part of the ſyſtem. Each of theſe movements is influenced by the atmoſphere, and other external agents. They are both graduated, according to different circumſtances, and affect a peculiar direction at the different periods of life.

The locomotive powers, which are merely modifications of thoſe of expanſion and condenſation, reſide in the muſcular fibre, the tiſſue of which is more or leſs denſe, and of which the contractile power varies, according to the greater or leſs denſity of its tiſſue, and is thus ſubordinate to the nutritive ſyſtem. Infants and women, in whom the glands and mucous tiſſue are more developed, become, in conſequence, more

more feeble than men, in whom the nutritive ſyſtem is leſs active and more rigid.

In general, the tonic powers detract from the digeſtive, whilſt theſe are augmented at the expence of the former; a fact, the truth of which is very apparent in animals of the carnivorous tribe; whoſe digeſtive powers are feeble, and only capable of acting on ſubſtances already animalized; whilſt their tonic powers enjoy the higheſt degree of energy. In infancy, the nutritive ſyſtem predominates over the venous and arterial ſyſtems. The expanſive movement manifeſts itſelf by the *rythm* of the pulſe, by abundant ſweating, and by exanthemata; it tends to free the cellular tiſſue, the ſeat of almoſt all the diſeaſes of infancy, from the heterogeneons matters which there abound.

Upon theſe principles the author regulates the regimen adapted to this early age, which he conſiders as the winter of life. Subſtances leſs animalized are here better adapted than animal food, &c. &c., becauſe the digeſtive powers are pre-eminent: exerciſe, too, is more neceſſary at this than at any other age. The cold bath, which arreſts the expanſive movements, is at this period contra-indicated.

In the period of youth, the ſpring time and morning of life, the digeſtive powers ſtill enjoy great activity. But the direction of the tonic powers undergoes a change; in men, towards the neck, cheſt, and afterwards the generative organs; in women, towards the uterus and the breaſts: hence the frequent hæmoptyſes and hæmorrhages in the one, and the eſtabliſhment of the menſtrual flux in the other.

The adult age brings with it the predominance of the tonic over the digeſtive forces; and of the former, the mode of condenſation over that of expanſion. Digeſtion here is leſs perfect, eſpecially in men, the muſcular fibres of whom are more dry, and more ſtrongly marked, and who have occaſion for food of a

L l 4 more

more animalized and ſpirituous nature than women, in whom the digeſtive powers are leſs changed from what they were in infancy, and who preſerve the peculiar appetites of that period for fruits, ſweets, and watery drinks.

Laſtly, in old age, the digeſtive powers ſtill ſubſiſt; but the expanſive movements, becoming leſs vital and active, are unable to direct the tonic forces towards the weakeſt and remoteſt parts of the hypogaſtric region; hence the frequency of ſtools and the abundance of urine at this period; the ſkin becomes dry, the extremities cold; the play of the organs requires the aſſiſtance of warm aromatic frictions, &c.; the viſage loſes its bloom; the hair falls off, as the leaves fall in autumn, the ſeaſon which is emblematical of this period of human life; this gives place to the laſt, or winter of life, the tomb.

From this deſcription of man in the ſtate of health, the author paſſes to the conſideration of the cauſes and treatment of the diſeaſes which accompany the reſpective periods of infancy, youth, manhood, and old age. He divides diſeaſes into nervous and humoural, according to the difference of leſion of the tonic and digeſtive powers: but he here enters a wide field of hypotheſis, in which we muſt decline following him.

ART. LXXVII. *Anatomie generale, appliquée à la Phyſiologie et a la Medicine. The Application of Anatomy to Phyſiology and Medicine. By* XAVIER BICHAT, *Profeſſor of Anatomy and Phyſiology in Paris, &c. &c.* 8vo. 4 vols. price 16 fr. 50 *cent.* Paris, 1801.

THE ſcience and ſtudy of anatomy have been hitherto almoſt excluſively applied to the improvement of the ſurgical art; the practice of medicine has

been

been but little influenced by them. It appeared to the author neceſſary to create, as it were, a medical anatomy. In order to this, an intimate knowledge of the ſtructure of the parts muſt be joined to a knowledge of the various functions they perform, of the ſympathies of which they are the ſeat, and of the relations of the different parts to each other.

The author commences his work with ſome general notions reſpecting the animal organization. In the ſtructure of animals in general, there are, he obſerves, a certain number of ſimple tiſſues which are every where the ſame, wherever found; which are ſimilar in their nature, their vital and phyſical properties, their ſympathies, &c. &c.; and which, as the real organized elements of the living body, are combined together in various ways, ſo as to form thoſe compound organs, which are deſtined by nature to perform the different functions.

Each of theſe ſimple tiſſues or ſtructures is termed a *ſyſtem:* the re-union of ſeveral of them conſtitutes an *organ*; and, laſtly, when an aſſemblage of different organs concurs in the performance of the ſame function, it is deſignated by the term *apparatus.* Thus we ſay, the cellular *ſyſtem,* the pulmonary *organ,* the digeſtive *apparatus.*

The different *ſyſtems* are diviſible into two general claſſes; the one, without being found collectively in all the organized parts, affords to each a common and uniform baſis; they unite their mode of vitality to that of the organs, into the compoſition of which they enter; ſuch are the cellular ſyſtem, the arterial, venous, exhalant, abſorbent, and nervous ſyſtems The other is leſs generally extended in the animal economy. Concentrated in ſome of the apparatus, they are ſtrangers to others, and have a life independent of them. Each of them is formed, firſt, of parts common to the tiſſues of the firſt claſs, and alſo of parts proper. Such are the oſſeous ſyſtem, medullary, cartilaginous,

tilaginous, fibrous, fibro-cartilaginous, muſcular, mucous, ſerous, ſynovial, glandular, dermoid, epidermoid, and pilous ſyſtems.

Theſe two claſſes of ſyſtems are conſidered by the author in regard to their external forms, their organization, or internal ſtructure, their properties, and the developement of each of them; as well in the ſtate of health as in that of diſeaſe.

Art. LXXVIII. *Sur la Temperature interne des Vegetaux, &c. On the internal Heat of Vegetables, compared with that of the Atmoſphere. By* C. Solome. *(An. de Chym.* No. 119.)

THE ſtudy of vegetable phyſics has engaged the attention of numerous philoſophers. We are well acquainted with the ſtructure of vegetables, their various organs, and the functions they perform. The phyſical cauſes of their growth, their conſtituent elements, and immediate principles, have all been inveſtigated. But with their temperature we are little acquainted. Whether vivacious and perennial plants have an equal capacity for caloric, and in what degree the cold air of winter is hurtful to them, when the temperature is below 0, are ſubjects that have hardly yet been entered on. Gardeners know, in general, that when the thermometer marks only a few degrees above 0, it is proper to return their pomegranates, and other tender ſhrubs, into their green houſes. But they have not learnt the degree of cold theſe plants are capable of ſupporting without loſing the vegetative faculty; nor do we know the degree of temperature they preſerve within themſelves, and which is neceſſary to maintain the circulation of their fluids.

M. *Bonnet* remarked, ſeveral years ago, that although a plant does not appear to us to be warm to the

the touch, there was no doubt of its poſſeſſing a certain degree of heat proper to it, and which, during winter, exceeds that of the ambient air. The circulation of its juices does not ceaſe, but is merely retarded: and this neceſſarily ſuppoſes the preſence of a certain degree of heat. Thus the heat of vegetables admits of compariſon with that of animals with cold blood! The experiments of M. *Bonnet* on this ſubject, however, were vague and unſatisfactory. It is the intention of M. *Solomé,* in the eſſay above announced, to diſcover by experiments more exact, what is the degree of temperature that exiſts in the interior of trees, in compariſon with that of the ſurrounding atmoſphere.

In the ſpring ſeaſon, he cauſed a hole to be bored, nine inches in depth, in the trunk of a tree, the diameter of which was eighteen inches, about eight feet above the ſurface of the earth. As ſoon as the inſtrument had reached the medullary parts, a manifeſt eſcape of air took place, followed by a ſtream of ſap ſo forcible as to be carried to a conſiderable diſtance, and the flow of which continued for the ſpace of a minute. The fluid that eſcaped was thin and tranſparent as alkohol, but was not ſubmitted to further examination. The force and celerity of its eſcape tend to prove, the author thinks, that the pretended circulation of fluids in vegetables is not the effect of a counterpoiſe, operating alternately from above to below, and from below upwards, but is owing merely to the rapid deſcent of the fluid lodged in the medullary part.

Into the opening thus made, was introduced a thermometer; whilſt a ſecond thermometer was inſerted, under ſimilar circumſtances, into a log of wood that had become dry in the open air. A third thermometer was ſuſpended againſt a wall expoſed to the north. The changes they underwent were noted daily, morning, noon, and night.

The

The thermometer that was inſerted in the dry wood, varied ſo little, in compariſon with that expoſed to the open air, that a further trial with it was deemed uſeleſs. When the temperature of the atmoſphere was at two degrees above 0, the thermometer in the tree roſe to 9 degrees, and when the heat of the air reached as high as 5 and 6 degrees, it advanced only to 10°.

On another occaſion, the thermometer in the open air marked 26 degrees; that plunged in the trunk of the tree roſe only to 16°. Theſe obſervations tend to prove, that the internal temperature of vegetables does not riſe or fall in the ſame proportion with that of the atmoſphere, but, on the contrary, that it maintains nearly a mean proportion, between the elevated and low ſtate of atmoſpheric heat. Other experiments confirmed the ſame point; and it was conſtantly obſerved, that when the temperature of the air was below fourteen degrees, that of the vegetable was above; but if, on the contrary, the open air exceeded 14 degrees, the temperature of the vegetable was below it; for the general reſult of the experiments, continued during ſix months, ſhewed, that the vegetable temperature was never below 9 degrees, nor above 19; whilſt the heat of the air varied, within the ſame period, from two to twenty-ſix. It appears, therefore, that vegetable life acts, in regard to internal heat, in a ſimilar way with the animal organization.

A remark not leſs intereſting, is, that the internal temperature of vegetables maintains itſelf at the ſame degree at the different periods of the day, and for many days in ſucceſſion; and that if it tends to vary, it is ſlowly, and in a very ſmall degree, although the temperature of the air ſometimes varies ten degrees in the ſpace of ſix hours.

The obſervations relative to the effect of a moiſt and dry atmoſphere, are deſerving of notice. A long continued rain ſenſibly diminiſhed the vegetable temperature.

temperature. After a rain that laſted fourteen hours, the thermometer in the tree deſcended to 3 degrees, whilſt that in the open air did not fall below 6.

The experiments of the author above recited, are neither ſufficiently numerous nor varied, to admit of general deductions from them; yet they are intereſting, and likely to ſtimulate to further enquiry. He himſelf propoſes to multiply his experiments on trees of divers textures, of different ſize, and height; and to introduce his thermometers at different diſtances between the root and ſtem. It is not improbable, that the reſult of the examination will tend to uſeful practical purpoſes; by enabling us to guard againſt the effects of great and ſudden atmoſpheric changes.

Art. LXXIX. *Tranſactions of the American Philoſophical Society, held at Philadelphia, for promoting uſeful Knowledge.* Vol. IV. 4to. 531 pages. Philadelphia, 1799. (New York Medical Repoſitory.)

THIS volume preſents to the public a continuation of the labours of the oldeſt aſſociation for promoting ſcience in the new world. Founded principally by the enterprize, exertions, and influence of Dr. Franklin, this Society has preſerved, from the period of its inſtitution to the preſent moment, much of that zeal for the advancement of practical and ſubſtantial inquiries, as well as of ſound learning in general, which diſtinguiſhed the character of that illuſtrious man. Some of the papers contained in this volume have already been noticed in our Review; of the remainder we ſhall now give a brief account; of ſuch, at leaſt, as have any material relation to our ſubject.

The

The firft paper confifts of 'Experiments and Obfervations relating to the Analyfis of Atmofpherical Air, by Dr. *Prieftley.*' Two pofitions are attempted to be experimentally eftablifhed in this paper: firft, that, in what he calls the *phlogiftication* of atmofpherical air, there is not merely an abforption of one portion of it, to wit, the oxygenous portion; but that the phlogifticating material emits a fomewhat which may be properly called phlogifton, or the principle of inflammability; and, fecondly, that the bafis of phlogifticated air, or azote, is compofed of phlogifton and dephlogifticated air, and is not a fimple fubftance, as the antiphlogiftians contend to be the cafe in the prefent ftate of chemical knowledge.

The title of the fecond paper is, 'Farther Experiments relating to the Generation of Air from Water,' by the Same. Having, in a former publication, delivered an account of fome experiments made to prove that air may be produced from the fame water, by means of heat and the Torricellian vacuum, without any perceivable limit, the learned author, in this communication, ftates the refult of farther experiments, to throw light on the fubject.

He had not obtained from water, in the former fet of experiments, any other kind of air than fuch as was, in a greater or lefs degree, purer than that of the atmofphere; and therefore he fuppofed that this might have been the fource of all atmofpheric air. But he has 'fince found, that though the firft quantity of air that is expelled from water is much purer than that of the atmofphere; the next is lefs pure, and at laft is wholly phlogifticated.' It may be inferred from this fact, according to the opinion of our author, 'either that the air produced from water is not that which had been imbibed from the atmofphere; or that, though it imbibes moft readily that which is pureft, it retains, with the greateft obftinacy, that which is leaft pure, which

which is analogous to other chemical affinities.' With the view of carrying the experiments on this ſubject as far as poſſible, Dr. P. endeavoured to convert the whole of a ſmall quantity of water into air, but without effect.

After the experiments thus made with water, our author proceeded to make ſimilar ones with ſpirit of wine; and found that inflammable air is produced, without any limitation, as far as he could diſcover from repetition of the proceſs.

Dr. P. concludes his account of theſe experiments with the following obſervations. 'The only objection that, after giving much attention to the ſubject, I think, can be made to the concluſion that I firſt drew from theſe experiments, viz. that air is actually produced from water, is the very ſmall quantity that is produced in proportion to the bulk of the water, after the air, naturally contained in it, is wholly expelled. But if it ſhall appear, after a long courſe of time, that this ſmall production of air, from the ſame water is conſtant and equable, I do not ſee how the concluſion, extraordinary as it may be thought, can be diſputed. This air being wholly *phlogiſticated*, is a ſufficient proof that the air ſo produced is not abſorbed from the atmoſphere in the courſe of the proceſs; for then it would have been dephlogiſticated, or, at leaſt, purer than that of the atmoſphere, which water always ſeizes upon in preference to that which is impure.'—If theſe facts be taken for granted, and there be no latent error in the experiments, they cannot be ſatisfactorily reconciled to the conſtitution of water, as aſſigned by the antiphlogiſtic theory, which, as well as the late galvanic experiments, they tend greatly to ſhake.

'Experiments on Evaporation; by C. Wiſtar, M.D.' This paper, which ſhews that the diſtillation of fluids may be made to take place by merely applying cold to the

the receiver of the apparatus, without any increafe of temperature in the evaporating fubftance, was noticed in a former number of the Med. and Chir. Review *.

'An Inquiry into the Caufes of the Infalubrity of flat and marfhy Situations; and Directions for preventing or correcting the Effects thereof: by Wm. Currie, M. D.' In this inquiry, Dr. Currie attempts to deliver fome account of the compofition of the foil of marfhes, which, befides different earthy matters, he ftates to confift of animal and vegetable fubftances broken down by putrefaction, of carbon, and nitre; and that this mafs, by diftillation, affords oil, hydrogen, and azote.

Finding that carbonic acid gas, hydrogen gas, and ammoniacal gas, are exhaled from the foil of marfhes, Dr. C. inquires whether any of thefe gafes, in a feparate or combined ftate, can be fuppofed to conftitute the miafmata faid to iffue from fuch low grounds. If carbonic acid gas, diluted with atmofpheric air fo as to become refpirable, were to produce morbid effects, he thinks fuch effects would be more likely to appear in the form of paralytic or comatofe difeafes, than in that of intermittent or remittent fevers. He rejects the opinion of the febrile influence of hydrogen gas itfelf, or of any combination of carbon and hydrogen in the form of gas; and forms, likewife, a fimilar conclufion concerning ammoniacal gas.

Having thus decided upon the morbid qualities of the above mentioned gafes, Dr. C. proceeds to deliver his own opinion concerning the caufe of the infalubrity of flat and marfhy fituations as follows:

'From the facts and obfervations which have now been ftated, I think it may be fairly concluded, that the caufe of the unwholefomenefs of low and moift fituations in the fummer and autumnal months is not

* Vide page 177 of the prefent volume.

owing

owing to any invisible miasmata or noxious effluvia, which issue from the soil and lurk in the air, but to a very different cause, viz. to a deficiency of the oxygenous portion of the atmosphere in such situations, in consequence of vegetable and animal putrefaction, in conjunction with the exhausting and debilitating heat of the days, and the sedative power of the cold and damp air of the nights.

'For want of the refreshing and salutary stimulus of pure air, all the functions of the body are performed imperfectly and languidly. The nervous system, in particular, becomes preternaturally susceptible of impressions from every change that occurs in the temperature of the surrounding atmosphere. The application of, or exposure to, a damper or colder state of the air than usual, renders the vessels on the surface of the body powerless and atonic; the brain and heart sympathize with the extreme nerves and vessels, the power of every function of the body declines, till the heart, roused by accumulation of blood, re-acts with increasing velocity, and is relieved of the unusual burthen.

'That the causes which I have now assigned are the true ones, is rendered next to certain from the frequent occurrence of those diseases (which have heretofore been supposed to depend upon the operation of specific miasmata) in situations remote from marshy ground, particularly in large and populous cities, where sedentary occupations, and want of exercise, render the inhabitants delicate and infirm. I have seen numerous instances of this kind, even in the winter season, when no effluvia from marshes could possibly exist, especially among those who had been previously debilitated by other disorders. Nor is it uncommon for persons who have recovered from intermittents in the autumn to have frequent recurrences of the same disease in the winter, merely from sitting in a damp room, or other exposure to cold.'

 The

The hypothesis which ascribes the prevalence of intermittent and remittent fevers, in marshy situations, chiefly to a deficiency of oxygen, is now, as the American editor justly observes, so generally abandoned, that it may be deemed superfluous to undertake its refutation. With all the fallacy of eudiometrical experiments made in the most careful manner, it appears that such trials of the air of marshes as have been most accurately performed with that instrument are far from warranting such a conclusion. But, even admitting that the air of marshes is deficient in oxygen, why should we apprehend more mischief from the abstraction of oxygen, by means of putrefaction on that kind of soil, than by means of combustion, fermentation, or the respiration of animals? If merely the sudden consumption of pure air be the object of dread, there is as much reason to avoid a brewery, a furnace, or a glass-house, a crowded church or theatre, as a marsh or a swamp. The attack of intermittent or remittent fever, so often taking place in consequence of only a short immersion in noxious air, and the frequent postponement of the attack till one or two weeks after such immersion, while, in the mean time, the healthiest air has been breathed, are likewise unanswerable objections to Dr. C.'s hypothesis.

'Hints relative to the stimulant Effects of Camphor upon Vegetables; by Benjamin Smith Barton, M. D.' The experiments made on this subject induce Professor Barton to think that camphor exerts a greater stimulant effect upon plants than any other substance with which he is acquainted. If the expensiveness of it should forbid us to employ it as a manure upon a large scale, still the author suggests, that 'a few grains of camphor, acting as a cordial, will revive a drooping plant, will increase its beauty, and prolong its existence'—objects of no mean importance in the eye of the florist. After some experiments

ments on the comparative ſtimulating effects of camphor and nitre, Profeſſor B. concludes that the reſult favours the idea, that camphor is a more wholeſome ſtimulant than nitre.

'Experiments and Obſervations on Land and Sea Air; by Adam Seybert, M.D.' In this paper we are preſented with a variety of eudiometrical experiments on land and ſea air, in many different ſituations.

Dr. Seybert believes that the air over a large body of water is always purer, *cæteris paribus*, than that of the adjoining land, owing, as he conjectures, to a decompoſition which the water may ſuffer from the action of the ſun's rays; and likewiſe, in part, to its abſorbing many foreign matters, which, on land, are more or leſs intimately mixed with the air in a mechanical way.

As to the ſtate of the air in different ſituations on land, Dr. S. adopts the concluſion of all the more reſpectable eudiometrical experiments, that the reſults vary but little. And he is diſpoſed to admit the opinion of Fontana, that 'the difference in the purity of the air, at different times, is much greater than the difference between the air of different places.'

'Obſervations intended to favour a Suppoſition that the black Colour (as it is called) of the Negroes is derived from the Leproſy; by Dr. Benjamin Ruſh.' The opinion ſupported in this paper is ſuppoſed to be rendered probable by the following facts and analogies; 1ſt. That the leproſy is accompanied, in ſome inſtances, with a black colour of the ſkin. 2dly. That the preternatural whiteneſs of the ſkin, often obſerved in leproſy, bears a ſtriking reſemblance to that morbid condition of the ſkin among ſome negroes, diſtinguiſhed by the name of *Albinos*, which has been ſuſpected to be a modification of leproſy. 3dly. By the blended appearance of white and black ſometimes

 obſerved

obſerved in caſes of leproſy. 4thly. By the ſimilarity of the morbid inſenſibility of the nerves in leproſy to the conſtitutional inſenſibility common among negroes. 5thly. By the ſtrong propenſity to venereal gratifications, which equally diſtinguiſhes the leprous and the negro conſtitution. 6thly. By the big lip and flat noſe of negroes, which are likewiſe ſymptoms of the leproſy. 7thly. By the analogy between the woolly hair of the negroes, and the trichoma or plica polonica of the Poles, which is a ſymptom of leproſy.

'An Inquiry into the comparative Effects of the Opium Officinarum, extracted from the Papaver Somniferum, or White Poppy of Linnæus; and of that procured from the Lactuca Sativa, or common cultivated Lettuce, of the ſame Author. By John Redman Coxe. M. D. &c.' Dr. Coxe's firſt experiments on theſe two ſpecies of opium were made on ſolutions of them in water, alcohol, and in a mixture of equal parts of both. And the reſults convinced him that the two ſpecies are very ſimilar in their qualities.

After ſubjecting them to a variety of chemical teſts, he ſtill found the ſame ſimilarity to hold good in a remarkable degree.

By introducing the watery ſolutions and ſpirituous tinctures of each ſpecies of opium under the ſkin, and in contact with the muſcles of frogs—into the ſtomach and rectum, and into the cavity of the abdomen of the ſame animal—and likewiſe by bringing them into contact with the eyes and brain—he diſcovered that both ſpecies poſſeſs nearly the ſame powers.

'Experiments and Obſervations on the Atmoſphere of Marſhes. By Adam Seybert, M. D.' It is the object of this paper, firſt, to determine whether or not the air of marſhes differs from that of other ſituations; ſecondly, to aſcertain what are the cauſes of the dif-

ferences

ferences which are found to exist; and, thirdly, to make observations and remarks.

I. It appeared from a number of experiments on air, obtained immediately as it was disengaged from the marshy soil, that carbonic acid gas enters largely into its composition—that hydrogen gas is an ingredient in it—and that no oxygene gas is present.

It was found that air, obtained at the height of several feet above marshes, contains little or no hydrogen gas—that the proportion of carbonic acid gas is pretty considerable—and that a large quantity of oxygen enters into its composition. Hence the author is induced to believe, that the air *above* marshes is not considerably different in its properties from the common atmosphere in other situations, where animals respire with ease, and enjoy perfect health, except the proportion of carbonic acid gas being greater, the gravity of which permits it to rise only to an inconsiderable height.

II. What are the causes of the peculiarities found to exist in the air of marshes?

Putrefaction of the animal and vegetable matters upon the soil of marshes is considered by the author as the great cause of the changes observed to exist in the air of them. That this is so, he infers from the following circumstances:—'Marshes have no noxious influence during the winter season. They cause disease when the circumstances are present which promote putrefaction; as a proper degree of heat, a due quantity of moisture, and the contact of atmospheric air, or substances capable of affording oxygen, as water.'

Many experiments to ascertain the action of mud, obtained from marshes, on atmospheric air, were made at different times, by our author, during the summer and autumnal months of the years 1796 and 1798. He observes, that these 'experiments teach us that mud vitiates the atmosphere in a very powerful manner.

 They

They also enable us to account for the presence of the elastic fluid forming the atmosphere of marshes. It appears that the carbon of the mud unites with the oxygen of decomposed water, and forms the carbonic acid gas, whilst the hydrogen gas is set at liberty.'

III. The remainder of the paper is devoted to inferences and concluding remarks.

In order to arrive at any just conclusion concerning the effects of marshes on the atmosphere, the author recommends the investigation of their composition. They are found to consist of more or less water—of different proportions of dead animal and vegetable matters—and of the earthy substances composing the original soil. Heat, moisture, the contact of atmospheric air, and rest, are circumstances attendant on marshy situations during the unhealthy seasons. From this assemblage of materials and agents, it might be supposed, *à priori*, our author observes, that the following effects will result. 1. That hydrogen gas would be disengaged. 2. That oxygen, combining with carbon, would form the carbonic acid gas. 3. That azote would unite with a portion of hydrogen, and thus produce ammonia, whilst another portion of it would, during its combination with oxygen, form the nitric acid. And, 4. That when sulphur and phosphorus were present, they, with hydrogen, would form the sulphurated and phosphorated hydrogen gases.—Dr. Seybert considers the presence of hydrogen gas, and of carbonic acid gas, in the atmosphere of marshes, as established by undoubted proofs. Ammoniacal gas he supposes to be one of the productions of putrefaction; but he doubts the presence of it in the air of marshes, on account of its ready combination with water, and its proneness to unite with carbonic acid gas, into a carbonate of ammoniac. As to nitric acid, though doubtless a product of putrefaction, he concludes that it is immediately absorbed by the neighbouring waters. He expresses conviction, that sulphurated

fulphurated and phofphorated hydrogen gafes do not exift in the air of marfhes.

On the whole, Dr. S. confiders marfhes as neceffary to keep the atmofphere *in a proper degree* of purity: for not only the impure atmofphere, but the too pure alfo, is deftructive to animals. And he imagines marfhes to have been formed by the Author of Nature in order to operate againft the powers which vegetables and other caufes poffefs of purifying the atmofphere, fo that the oxygen may exift in a proper proportion fit to fupport animal life and combuftion.

'An Effay on a new Method of treating the Effufion which collects under the Skull, after Fractures of the Head.' By *J. Deveze*, Officer of Heath, of the Firft Clafs, in the French Armies. The operation of the trepan is fometimes required to relieve that effufion between the dura mater and the fkull occafioned by injuries of the head. The difficulty of afcertaining precifely the fpot where the effufion is accumulated, often makes frequent operations neceffary.

To avoid this inconvenience, the author propofes to deftroy the adhefion which unites the dura mater to the fkull, and eftablifh a communication between the collected blood and the opening already made by the trepan. He relates a cafe, where he performed this operation with a filver fpatula, very flexible, and the extremities of which were rounded. He took the precaution to prefs it toward the bone, and to bend the inftrument by degrees as it was introduced, to make it take the form of the part upon which it acted; and often he drew it back to meafure on the outfide the way it had made. At length he happily reached the part where the blood was collected, which flowed in great abundance, and the patient was foon relieved.

Art. LXXX. *Avis au Femmes Enceintes, &c. Advice to pregnant Women, and on the Phyſical Education of Children, intended to guard them from the Diſeaſes to which they are expoſed, to inſure them a good Conſtitution, to render them inſenſible to the Heat and Cold of different Seaſons; in a Word, to procure a more early Developement of their phyſical and moral Faculties.* 12mo. 60 pages, price 1*s*. Straſburgh, 1801. Imported by T. Boosey.

THIS is an uſeful code of inſtructions relative to the domeſtic management of pregnancy and childhood; pointing out, in a familiar ſtyle, the moſt important duties of the mother, both with regard to herſelf and her offspring. The author combats with effect many prevailing prejudices on theſe ſubjects. It might, however, be objected to him, that he inculcates rather too artificial a mode of conduct, and is himſelf not wholly free from the ſuperſtitious practices he condemns in others: as, when he ſtrictly cautions us, before tying the umbilical cord, to ſqueeze out, with the finger and thumb, a yellowiſh liquor or ferment contained in it; and always to place the cord on the belly, with its extremity towards the left ſide; the covering the fontanel with a piece of *ſcarlet* cloth, &c. But theſe are trifles.

The directions here given are chiefly compiled from the works of Tiſſot, Fourcroy, and Salmade, and agree in the main with the plan of education laid down by Buffon in his *Treatiſe on Natural Hiſtory.*

MISCEL-

MISCELLANEOUS.

§ 82. *Extract of a Letter to Professor Volta, on Animal Electricity, by* J. Tourdes, *Professor at the School of Medicine at Strasbourgh.*

"THE many proofs of confidence and friendship you honoured me with, during my residence in Italy, embolden me to communicate to you the result of an experiment, which appears to me to resolve one of the problems the most disputed in physiology; that of the vitality of the blood. This fluid, deprived of its aqueous moisture, of its lymph, &c. is reduced to the fibrous state; when submitted to your galvanic, or rather electric, apparatus (for your late researches establish, in an incontestible manner, the identity of the galvanic and electric fluids), and exposed to a temperature of about 30 degrees (about 99 of *Fahrenheit*), it exhibited a sort of trembling, oscillation, or palpitation, analogous to that which is observed to take place in the flesh of an animal newly killed; *a double movement of contraction and dilatation*, sensible to the eye when armed with a convex glass lens; a circumstance this, characteristic of the vital power, peculiar to muscles, the cellular tissue, &c. &c."

§ 83. *Meteorological Observations.*

It is a common observation, that violent excesses, both of heat and cold, are generally and suddenly followed by the opposite state of weather. For example, when, in summer, the heat arrives to nearly a suffocating degree, a column of cold air rushes in from the surrounding points, compressing the rarefied air, and generally occasioning a storm in the neighbourhood. In winter, when the cold has reached its most intense degree, the approach of a thaw is generally looked for.

These events M. *Coupé* endeavours to explain and account for, in a curious, if not a satisfactory, manner; by supposing, with C. *Baillet*, that

that when a portion of air is compressed into a fifth or sixth part of its original volume, an equivalent portion of the caloric it contains, is, as it were, squeezed out, and becomes sensible. Upon this principle, when a column of wind from the north directs its course southward, and by its force of impulsion compresses the air before it, as it endeavours to force a passage, a portion of the heat of the compressed air is squeezed out; and this is observed in general to be speedily followed by a storm.

In like manner, when the compressed air of the air-pump is suffered to escape, it seizes the heat necessary to its expanded state from all the adjoining bodies with which it comes in contact. In this way may be explained the extreme cold which takes place at the first fall of the barometer, when a thaw is about to commence.

This barometrical force of compression and expansion acts not only on the caloric, but still more perceptibly on the water contained in the atmosphere: by the rarefaction or density thus occasioned, the dissolving power of the air is diminished or increased, occasioning serene or cloudy weather, dissolution or rain. (*Journal de Physique, An.* 10.)

---

§ 84. *Effects of the Vaccine Inoculation on the general Health.*

In the report on the vaccine disease, read lately before the *Society of Medicine* of *Brussels*, and drawn up by a special committee appointed to examine the subject, we find some remarks respecting the effects of the vaccine inoculation on the general health, which are deserving notice. The committee observe, that the augmentation and irregularity of the nervous action opposes, and sometimes prevents even, the vaccinal eruption. This is the case at the menstrual periods in females, and during the attack of intermitting fevers. They remarked also, that in feeble and delicate subjects, where the lymph is but little abundant, the vaccine tumours acquired but small volume, and the desiccation speedily took place; whilst in individuals of a relaxed fibre, and in whom the lymphatic system predominates, the tumours acquired considerable magnitude, and furnished a matter proper for vaccination, as late even as the 16th day.

This particular action of the vaccine poison on the lymphatic system promises to furnish a valuable means of excitement in diseases occasioned by defect of action in this system; and, in fact, it has been said to produce a favourable change in scrophulous habits. Two instances of this sort are mentioned in the report above alluded to. In one of them, a child three years of age, enlargement of the glands of the neck and arm, with swelling of the upper lip and *alæ nasi*, disappeared during the process of vaccination. In the other, mesenteric disease, with a short

and

and difficult respiration, and other marks of scrophula, were equally relieved under the same process.

---

§ 85. *Cheap and easy Process for preparing Radical Vinegar, or the Acetic Acid. By M.* Perès.

By the process in common use for the preparation of the acetic acid, viz. by distillation from the acetite of copper, a comparatively small quantity only of this substance is obtained, and that at a very considerable expence. The mode recommended by M. *Badollier*, and which was noticed in the 7th vol. (p. 488) of our Review, is attended with important advantages; it consists in distilling together equal parts of the *sulphate of copper* (blue vitriol), and the *acetite of lead* (saccharum saturni). In this process the sulphuric acid quits the copper, to combine, in preference, with the lead; whilst the acetic acid, set at liberty, is carried over by a moderate degree of heat.

The method of M. *Perès* is founded on the supposition, that the real difference between the *acetous* and the *acetic* acids consists in the latter being deprived of its carbonous principle; and that the ordinary process for preparing it effects nothing more than the extracting this excess of carbon. In this view, the following process is described.

'I distilled,' M. Perès observes, 'a kilogramme of sulphuric acid with two kilogrammes of good white wine vinegar. I suddenly brought the mixture to ebullition, and obtained a very large quantity of radical vinegar, as white and pungent as that of commerce. This process is so simple and economical, that I thought it would be useful to extract it from the memoirs which I have given upon this branch of chemistry, and offer it to manufacturers. I can assure them, that it will diminish the expences of the manufacture by three-fourths. In fact, the sulphuric acid which remains may still serve for two more operations; but then it will be necessary to rectify the radical vinegar, for it will be found impregnated with sulphurous acid gas. It would be proper to try whether the action of manganese, which is used for ether, might not be applied to this rectification. I do not apprehend that this metal, in so high a degree of oxidation, is susceptible of being attacked by the acetic acid.

'An erroneous opinion obtains, with respect to the tendency of this acid to combination, which I think it incumbent upon me to refute. Chemists place it, in their tables of attractions, in a much higher rank than it will be found entitled to, upon an investigation of its properties with the least degree of accuracy. We find that it displaces only the carbonic, acetous, and other weak acids. This error has arisen from the

the appearance of ſtrength which it derives from the pungency of its ſmell. In this inſtance, however, the chemical properties of the ſubſtance are by no means proportionate to the impreſſion it makes upon our ſenſes. I ſhall add an obſervation which proves that this acid is much leſs powerful than is generally imagined; namely, that the vapour which it ſpontaneouſly emits, and which might ſeem to be its moſt acid portion, ſcarcely reddens paper tinged with tincture of turnſol. In fact, it is nothing more than a modification of hydrogen, and it takes fire like ether.'

---

§ 86. *Hiſtorical Sketch of the different Gaſes, with the Times of their Diſcovery, and their Authors.* (From Journ. de Phyſ.)

1. *Fixed air*, diſcovered by Dr. *Black* in 1761.
   Carbonic acid gas.
2. *Inflammable air*, diſcovered by *Cavendiſh* and *Prieſtley* in the year 1771.
   Hydrogene gas.
3. *Dephlogiſticated air* of Prieſtley, diſcovered by him in 1774.
   Oxygene gas.
4. *Phlogiſticated air* of Prieſtley, diſcovered in 1774.
   Azotic gas.
5. *Nitrous air* of Prieſtley, diſcovered in 1772.
   Nitrous gas.
6. *Dephlogiſticated nitrous air* of Prieſtley, diſcovered in 1774. Bodies burn in this gas with activity. It diminiſhes in bulk when mixed with vital air, or that of the atmoſphere.
   Oxygenated nitrous gas, or nitrous oxygene gas.
7. *Gaſeous oxyd of Carbone*, diſcovered by *Prieſtley* in 1795.
   So called likewiſe by *Woodhouſe* and *Cruickſhank*, who deſcribed its various qualities.
   Carbonic oxygenated hydrogen gas.
8. *Gaſeous oxyd of azote* of *Davy*, diſcovered by him in 1800.
   Azotic oxygene gas.
9. *Heavy inflammable air* of *Prieſtley*.
   Inflammable air of Marſhes, of *Volta*.
   Carbonated hydrogene gas.
   Commonly called hydro-carbone.
   This term, however, appears improper, as it ſignifies properly carbonated water, ὕδωρ water.
10. *Oil-making inflammable gas*, of the Dutch. Oily inflammable air.
   This air forms oil, when mixed with muriatic acid gas.
   Oleo-hydrogene gas.

11. *Hepatic*

11. *Hepatic air* of *Bergman.*
    Fetid air of sulphur, of *Scheele.*
    Sulphurated hydrogene gas.
12. *Phosphoric inflammable air of Gengember* and *Kirwan*, discovered in 1787.
    Phosphorated hydrogene gas.
13. *Ferruginous hydrogene gas.*
    Inflammable air of marshes, containing iron.
14. *Æthereal inflammable air.*
    Inflammable air charged with æther. It was with this gas that *Diller* made his beautiful coloured flames, by passing it through different tubes.
    Æthereal hydrogene gas.

Hydrogene gas is capable of being impregnated with other substances.

15. *Sulphureous acid gas.*
16. *Marine acid air* of Priestley, discovered by him in 1773.
    Muriatic acid gas.
17. *Dephlogisticated marine acid air* of *Scheele*, discovered in 1774.
    Oxygenated muriatic acid gas.
18. *Fluoric acid gas* of Scheele, discovered by him in 1771.
    Fluoric gas.
19. *Alkaline air* of Priestley, discovered in 1775.
    Ammoniacal gas.

---

§ 85. *Sugar from the Beet-root.*

We lately presented our readers with a detailed account of the process employed by M. *Achard* for extracting the sugar from the beet-root, and the remarks of the French chemists on the subject, after having repeated the experiments of the former. In a letter to M. *Van Mons*, written subsequent to the report in question, M. *Achard* declares his conviction of the superior advantage attending the operation of first boiling the roots before expressing their juice, contrary to the opinion of the commission, who advised the juice to be expressed in the raw state. The advantage of the former method consists, according to M. *A.*, in the clarification taking place in the cells themselves of the roots, in consequence of the coagulation of the albumine by the heat employed; so that the juice is obtained already pure, and more completely so than can be effected by any subsequent addition of blood, or other involving coagulable matters.—Ann. de Chym. No. 110.

§ 86.

§ 88. *Germination of Seeds in compreſſed Air.*

In the ſame letter, above quoted, M. *Achard* obſerves, that he has made ſome experiments on the germination of ſeeds in compreſſed air; the reſult of which is, that this proceſs is quicker in proportion as the air is more compreſſed; and the difference in this reſpect is found to be conſiderable. The author made, likewiſe, ſome experiments on the duration of life in animals in air condenſed in different degrees. He obſerved, that, in air three times denſer than the atmoſphere, an animal lived, other circumſtances being equal, five times as long as in an equal volume of air under the ordinary preſſure of the atmoſphere. It was remarkable, that, when the air was ſuddenly condenſed to a third part of its bulk, the animal fell into a ſtate of inactivity, or lethargic torpor, in conſequence, perhaps, of preſſure on the brain. After this ſtate has continued for ſome time, the animal recovers its natural activity, but ſoon falls into a ſtate of apparent anxiety, which goes on increaſing till death takes place. It is remarkable, alſo, that the animal œconomy does not appear to ſuffer from this ſtate of compreſſion; for when birds were kept, for an hour together, in air compreſſed to a fourth of its ordinary volume, on being ſet at liberty, they manifeſted no ſigns of having ſuffered inconvenience therefrom.—(Ibid.)

§ 87. *On the Combination of the Acid of Tartar with ſalifiable Baſes. By M.* Thenard.

It has been long known that the acid of tartar was ſuſceptible of forming a triple combination with different baſes; for example, in the *ſel de ſeignette* (Rochelle ſalt), *ferrum tartarizatum*, *emetic tartar*, and others. M. *Thenard*, in a memoir on this ſubject, the reſult of numerous experiments, has greatly multiplied the number of theſe triple combinations. He found that the *acidulated tartrite of potaſh* (common tartar or cream of tartar, as it is called) * is capable of forming triple ſalts with various earthy as well as metallic and alkaline baſes; and theſe combinations are poſſeſſed of peculiar properties. When lime or chalk is added to a ſolution of acidulated tartrite of potaſh, no precipitation takes place till the exceſs of acid in the cream of tartar approaches its term of ſaturation; and if this point be not exceeded, tranſparent cryſtals are formed on the ſides of the veſſel, which, on examination, are found to conſiſt of the tartarous acid, potaſh, and the calcareous earth employed. Similar combinations take place with

* To many of our readers the new chemical nomenclature is probably not yet perfectly familiar; they will not take it ill, therefore, that we frequently ſubjoin the ordinary denomination of ſubſtances to that of the new chemiſtry.

barytes

barytes and ſtrontian, ſeparately employed. That a triple combination is really formed in theſe caſes, is manifeſt from hence; that the ſimple union of either of theſe earths with the tartarous acid, forms a ſalt inſoluble in water, and that precipitates itſelf as ſoon as formed.

The degree of affinity which the earthy and alkaline baſes poſſeſs comparatively for the acid of tartar, is in the following order: lime, barytes, ſtrontian, potaſh, ſoda, ammoniac, magneſia, alumine.

M. *Thenard* next examines the triple compounds of metallic ſubſtances with the acidulated tartrite of potaſh, eſpecially zinc, tin, copper, mangaueſe, mercury, ſilver, and antimony. In order to obtain this laſt pure, in the preparation of emetic tartar, it is neceſſary, he obſerves, to take the cryſtals formed during the firſt evaporations only. From experiment it appeared, that the component ingredients in the tartarized antimony (emetic tartar) exiſt in the following proportions: antimony 38 parts; acid of tartar 34; potaſh 16; water 8.

---

§ 90. *Sulphate of Lime in Plants.*

The juice of cabbage, and that of the leaves of the *ſolanum lycoperſicum*, contain the ſulphate of lime (*gypſum*) in great abundance. This ſubſtance is depoſited ſpontaneouſly during the concentration of thoſe liquids. The *cruciferous* plants, and the other ſpecies of ſolanum, will, no doubt, be found likewiſe to contain it.—(*Journ. de Phyſ. An.* 10.)

---

§ 91. *Effects of Oxygene on Vegetation.*

M. *Sennebier*, in a ſupplement to his great work on vegetable phyſiology, remarks, that oxygene, although decidedly neceſſary to vegetation, yet, in its pure ſtate, is not the moſt favourable for the purpoſe; it accelerates, indeed, germination, but renders the proceſs, at the ſame time, feeble: it is neceſſary that its action be reduced, in ſome degree, by the admixture of a ſubſtance inactive in itſelf. And here we find another inſtance of the wiſdom of Nature; the mixture the moſt favourable to germination and growth, is preciſely that which forms the air of the atmoſphere; about three parts of oxygene to one of azote: germination does not at all take place, if there be not, at leaſt, an eighth part of oxygene in the atmoſphere.

The manner alſo in which oxygene is introduced is not indifferent; it muſt be added at once, for if it be admitted by little and little only, the

the firſt portions would ſcarce ſuffice for abſorbing the carbone of the ſeeds, and none would remain to ſtimulate and vivify them.

The germination of ſeeds likewiſe takes place, although carbonic acid or hydrogene be mixed with the oxygene. In the latter caſe, the carbone iſſuing from the ſeeds unites itſelf intimately with the hydrogene. Too much carbonic acid in the air is found to be more prejudicial than an exceſs of azote, and this than too much hydrogene. Many vapours likewiſe are capable of preventing germination; for example, the vapours of ſulphuric æther, camphor, oil of turpentine, vinegar, ammoniac, &c.

Yet, neverthelefs, this neceſſity for oxygene, in order to germination, is liable to ſome exceptions. There are ſome ſeeds ſo vigorous as to decompoſe water, in order to obtain its oxygene, if they even are not capable of diſpenſing with it altogether. Thus peaſe germinate in water deprived of air, in all ſorts of gas, and even in oil, provided they have before been well impregnated with water.

---

§ 92. *Of the Production of Animal Heat.*

M. *Socquet* examines anew the queſtion of the production of animal heat, and conſiders the theory of the new chemiſtry as inadequate to its explanation. In his opinion, the production of animal heat depends on the altered capacities of the new particles continually added to the ſyſtem during the proceſs of aſſimilation. M. *De la Metherie*, however, conſiders the cauſes of this phenomenon as more various. He attributes it, 1. To the caloric diſengaged from the oxygene abſorbed in inſpiration. 2. To the general fermentation taking place in all the animal fluids, which are continually undergoing decompoſition, in order to the formation of new compounds. 3. To the fixation or cryſtallization of the nutritive particles; and, laſtly, to muſcular motion.

---

§ 93. *New Chemical Nomenclature.*

M. *Brugnatelli*, obſerving the inſufficiency of the modern chemical nomenclature, has been endeavouring to eſtabliſh one which he deems better adapted to the phenomena: he propoſes the following changes in this reſpect.

Ther-

Thermoxygene, or the chemical combination of caloric with oxygene.

Thermoxygene gas, the ſame baſe in the ſtate of gas.

Thermoxyds are the combinations of thermoxygene with different baſes, as the metals. Thus, what were formerly called metallic calces are, according to this ſyſtem, thermoxyds.

Oxygene is the baſis of the pure air of the atmoſphere, deprived of its caloric, which conſtituted it *thermoxygene*.

It is this oxygene without caloric, which, combined with oxydable baſes, gives birth to the *oxycs* (acids).

Phlogoſene is inflammable gas in the concrete ſtate: the ſame, combined with caloric, forms *phlogoſene gas*.

Septonous gas is the ſame as azotic gas.

The *gaſeous oxyde of ſepton* is the nitrous gas. According to the modern theory, this gas only differs from atmoſpheric air by the different proportions of the azote and oxygene of which it conſiſts; but, according to M. *Brugnatelli*, the difference between the two is, that in atmoſpheric air the *ſeptonous* (azotic) gas is mixed with the *thermoxygene* (oxygene gas), whilſt the other (nitrous gas) conſiſts merely of *oxygenated ſeptone*, in the ſtate of gas. This, he thinks, is proved from hence, that phoſphorus does not undergo combuſtion, or emits no light, in the latter (nitrous gas), as it does in atmoſpheric air.

---

§ 94. *Aeronautic Improvements.*

This new and curious branch of philoſophy has been much cultivated by our Gallic neighbours, who have made it the ſubject of a particular eſtabliſhment, with a view to its application to military operations, as a means of reconnoitring the ſituation of an enemy, a purpoſe, to which it is ſaid already, more than once, to have been ſucceſsfully applied. It is to be hoped that, at ſome future period, it may be made to contribute to the welfare, inſtead of the deſtruction, of mankind. The hydrogen gas employed for filling the balloon was firſt produced by the action of the ſulphuric acid on iron or zinc. Of late, however, a conſiderable improvement has taken place in this reſpect, and the hydrogen is procured by the decompoſition of water, by means of heated iron.

The gas is prepared by the following ſimple and unexpenſive proceſs: Six or more hollow iron cylinders are ſet in brick-work, beſide and over each other, in a furnace, which may be conſtructed in twelve hours; and both ends of each cylinder are made to project from the furnace. The opening of theſe cylinders are ſtopped with ſtrong iron covers, through which metal tubes are let in. The tube, at one end, ſerves for pouring water, previouſly heated, into the cylinders, when red hot; that on the oppoſite ſide is deſtined to conduct the air which firſt preſents itſelf through a reſervoir filled with a cauſtic lixivium, and to convey it into the balloon. The cylinders are partly filled with coarſe iron filings, which the exceſſive heat of the furnace, kept up with pit-coal during the whole time of the operation, reduces to a ſtate of incandeſcence. At this ſtage of the proceſs, the valve of one of the tubes of each cylinder is opened, and a ſmall quantity of boiling water is gently poured into the heated cylinder. As ſoon as the vapour of the water touches the heated iron, the two ſubſtances which compoſe the water are ſeparated: the one (the oxygen) attaches itſelf to the iron, which it calcines, and which, after the operation, is found partly cryſtallized, after the manner of volcanic productions; the other of the component ſubſtances of the water (the hydrogen) combines with a quantity of the igneous ſubſtance termed *caloric*, and becomes inflammable air (hydrogen gas), which continues in a permanent ſtate of elaſtic fluidity, and weighs ſeven or eight times leſs than the atmoſpheric air.

As the water contains a ſmall portion of the ſubſtance of carbone (carbonique), which would render the air in the balloon heavy, the air, as it firſt ruſhes out of the cylinders, is made to paſs through a reſervoir of water, impregnated with a cauſtic alkali. This fluid attracts to itſelf all the *carbone*, and nothing riſes into the balloon but very pure inflammable air.

During the operation, it has ſometimes happened that the cylinders, heated to incandeſcence, melted. To guard againſt this accident, the projecting end of the cylinder is furniſhed with a pyrometer and a ſcale, which, by means of an iron rod, indicates the degrees of rarefaction of the air. A particular point on the ſcale announces the moment when the cylinders are heated in the degree neareſt to fuſion: when ſuch is the caſe, the fire is immediately diminiſhed. The operation of filling a balloon of thirty feet diameter employs one third of a day.

Corref-

Correſpondence.

Dr. *Langſlow*, in a long letter addreſſed to the Editors of the *Medical and Chirurgical Review*, complains that we have done him an injuſtice, in ſtating, as we did, in our account of Mr. *Crowfoot's* pamphlet, "that it originated in one of thoſe profeſſional feuds, which do no credit to the parties concerned." We really cannot plead guilty to the charge. The diſpute, we ſtill think, has been carried on with more of perſonality than of regard to truth, and, therefore, that it is of little importance, but to the parties themſelves. Dr. *L.* obſerves, in his letter, 'that he conceives *complete* apoplexy to be *generally* produced by *preſſure* on the brain.' In this opinion he is probably correct; but we cannot help remarking, that his language here is much more qualified than before, when he aſſerted, at leaſt is ſaid to have ſo done, "that in every caſe of real apoplexy which poſſibly can occur, the cauſe is either extravaſation, exſudation, or effuſion." If, as we ſuppoſe, apoplectic ſymptoms may be produced, without either of theſe taking place, from mere diſtenſion of veſſels, the conſequence of increaſed action, then emetics may occaſionally prove ſerviceable, by their well-known property of taking off partial increaſed actions in diſtant parts of the ſyſtem. It is at leaſt abſolutely certain, that they have frequently been adminiſtered in ſlight attacks of apoplexy, without at all retarding the progreſs of recovery. We wiſh much to ſee a diſcuſſion of this point, without any regard to party.

Dr. *L.* deſires us to announce the following pamphlets on the ſubject, as about to make their appearance;

1. An Hiſtorical Sketch of the Controverſy; compriſing all which has yet appeared on the ſubject: with Notes and Illuſtrations.

2. Strictures on Mr. *Crowfoot*'s Obſervations; with the Author's reaſons for thinking that mere diſtenſion, congeſtion, or fulneſs of the veſſels of the brain, cannot produce ſufficient preſſure to occaſion complete apoplexy—ſuch as the Greek words, from which the name is derived, indicate—*to ſtrike*, or, in other words, to fall ſenſeleſs to the ground.

No. XLVIII.

THE

MEDICAL AND CHIRURGICAL REVIEW.

MAY, 1802.

Art. LXXXI. *Philoſophical Tranſactions of the Royal Society of London, for the Year* 1801. *Part II.*

(Continued from page 412.)

THE next article (the 20th), contains an 'Account of ſome Galvanic Combinations, formed by the Arrangement of ſingle Metallic Plates and Fluids, analogous to the new Galvanic Apparatus of Mr. *Volta*. By Mr. *Humphry Davy*, Lecturer on Chemiſtry in the Royal Inſtitution.' This paper, ſhewing that an accumulation of the galvanic influence, exactly ſimilar to the accumulation in the common pile conſiſting of alternate ſeries of metals with a fluid interpoſed, may be produced by the arrangement of ſingle metallic plates, or arcs, with different ſtrata of fluids, was noticed in a former number of our Review.*

Art. 21. 'A Continuation of the Experiments and Obſervations on the Light which is ſpontaneouſly emitted from various Bodies: with ſome Experiments and Obſervations on Solar Light, when imbibed by

* See p. 284 of the preſent volume.

Canton's

Canton's Phoſphorus. By *Nathaniel Hulme*, M.D., &c.' In the author's former eſſay on this curious ſubject,* the effect of different fluids, and of heat and cold, on the ſpontaneous light emitted by various bodies, was examined; in the preſent, the agency of different gaſes is inveſtigated. The apparatus employed in the experiments was very ſimple, conſiſting only of, 1. a tea ſaucer, holding about three ounces of water; 2. a wide-mouthed phial, which would contain about ten ounces of liquid; 3. a ſmall wooden ſtand, compoſed of a ſlender pillar or pin, nearly four inches high, fixed into a round baſe a little more than an inch in diameter, and half an inch thick. This ſtand was faſtened by ſtrong thread to the middle of a piece of flat lead, ſuch as lines Chineſe tea-cheſts, having holes in it to admit the thread; the lead was about three inches ſquare, and doubled, to give it weight and ſtability. The top of the pillar was made pointed, and a round piece of cork, about an inch in diameter, and half an inch thick, was fixed upon it, to receive and ſupport the matter ſubjected to experiment. The different gaſes employed were introduced into the inverted phial by means of the pneumatic tub. Thus the experiments were made in about eight ounces of air, by meaſure, confined above two ounces of water.

It was firſt found, that objects which abound with ſpontaneous light in a latent ſtate, ſuch as the herring, mackarel, and the like, do not emit it when deprived of life, except from ſuch parts as have been ſome time in contact with atmoſpheric air: for neither the internal parts of the herring, when divided tranſverſely, nor the ſurfaces of two that had been placed in contact with each other, were at all luminous, though the parts which were expoſed to the air became exceedingly ſo. It appears alſo from experiment, that the

* For an account of this, ſee p. 227 et ſeq. of our laſt volume.

blaſt

blaft of a pair of bellows does not increafe this fpecies of light, whether emitted from fifh, rotten wood, or the glow-worm, as it does that which proceeds from combuftion.

With refpect to oxygene gas, it does not appear to act upon this kind of light fo as to render it much, if at all, more vivid than it is in atmofpheric air; which is quite contrary to what fome authors have alledged.

Azotic gas was next employed, produced in three different ways; 1. that obtained from lean mufcular flefh and diluted nitric acid, in a very low heat, as recommended by M. *de Fourcroy*; 2. air rendered azotic, by burning fpirit of wine in it, when confined above water; and, 3. the fame azotic gas, after being wafhed with lime water. Pieces of frefh mackarel and herring were immerfed in the firft fpecies of azotic gas, but did not become at all luminous; yet when fome herring and mackarel light was introduced on the cork, it continued luminous for the ufual length of time. A piece of fhining wood was rendered dark in this gas in about fifteen minutes. The other fpecies of azotic gas did not appear to differ in their action on the fpontaneous light, from atmofpheric air.—It appears a little extraordinary, that azotic gas fhould be fo favourable to the fpontaneous light emitted from fifhes, as to preferve its exiftence and brilliancy for fome time, when *applied upon a cork*; yet that it fhould prevent the *flefh* of the herring and the mackarel from becoming luminous, and alfo extinguifh the light proceeding from rotten wood. Thefe experiments deferve to be cautioufly repeated.

The effects of hydrogene gas or inflammable air were next examined: the gas was obtained from zinc and diluted fulphuric acid. It appears, in general, that hydrogen gas prevents the emiffion of fpontaneous light, and alfo extinguifhes it when emitted; but, at the fame time, it does not hinder its quick revival, when the fubject of the experiment is again expofed

 to

to the action of atmoſpheric air; and that although the light may have been a conſiderable time in an extinguiſhed ſtate.

The effects of carbonic acid gas were nearly ſimilar, this gas having an extinguiſhing property; in this caſe, too, the light returned in general, if the object of experiment was taken out and expoſed to the open air.

Sulphurated hydrogen gas, obtained from ſulphuret of potaſh and diluted muriatic acid, was next tried. In this caſe it appeared that the light was extinguiſhed much ſooner than in carbonic acid gas, and returned much more ſlowly, when the ſubject was expoſed to atmoſpheric air.

Nitrous gas was obſerved to prevent totally the emiſſion of light, and to quickly extinguiſh that which had been emitted. The luminous objects which had been under its influence (except the glow-worm) did not experience a revival of their light, when taken out, and kept for ſome time in common air.

The author next obſerved the effects of a vacuum on ſpontaneous light emitted both by rotten wood and the fleſh of the herring. In both caſes it was found that the light became fainter and fainter, as the incloſed air was withdrawn, and at laſt nearly vaniſhed. When freſh air was leiſurely admitted, the light was revived in a very beautiful manner.

Some experiments were then made on the light emitted by *Canton*'s phoſphorus, prepared by calcining oyſter ſhells in a crucible, in layers, with flowers of ſulphur, or, which is better, precipitated ſulphur, ſtrewed between each layer. From theſe experiments it appears that ſolar light, when imbibed by *Canton*'s phoſphorus, is ſubject to the ſame laws, with reſpect to heat and cold, as the ſpontaneous light of fiſhes, rotten wood, and glow-worms.

Art. 22. ‘ Experiments on the Chemical Production and Agency of Electricity: by *William Hyde Wollaſton*,

Wollaston, M.D., F.R.S.' Notwithstanding the power of *Volta*'s electric pile is now known to be proportional to the disposition of one of the metals to be oxydated by the fluid interposed, a doubt has been entertained by many persons, whether this power arises from the chemical action of the fluid on the metal, or, on the contrary, whether the oxydation itself may not be occasioned by electricity, set in motion by the contact of metals that have different conducting powers. That the oxydation of the metal is the primary cause of the electric phenomena observed, may be inferred, Dr. *Wollaston* thinks, from the experiments here adduced, which exhibit the galvanic process reduced to its most simple state.

Exper. 1. If a piece of zinc and a piece of silver have each one extremity immersed in the same vessel, containing sulphuric or muriatic acid diluted with a large quantity of water, the zinc is dissolved, and yields hydrogen gas, by decomposition of the water: the silver, not being acted upon, has no power of decomposing water; but, whenever the zinc and silver are made to touch, or any metallic communication is made between them, hydrogen gas is also formed at the surface of the silver.

Any other metal besides zinc, which by assistance of the acid is capable of decomposing water, will succeed equally, if the other wire consists of a metal on which the acid has no effect. Analogous experiments may be made with many metallic solutions. If, for instance, iron and silver be both immersed in a solution of copper, and the two metals be brought into contact, the silver, as well as the iron, receives a coating of copper.

These facts Dr. *Wollaston* endeavours to explain by supposing, that, as the zinc, in the first case, without the contact of any other metal, has the power of decomposing water, we can have no reason to suppose that the contact of the silver produces any new power, but

that it serves merely as a conductor of electricity, and thereby occasions the formation of hydrogen gas. And in the instance of the metallic solution, the silver in like manner, by conducting the electricity evolved during the solution of the iron, acquires the property of precipitating the copper in its metallic state.

The explanation here given receives additional confirmation from comparative experiments made with common electricity; for the same transfer of chemical power, and the same apparent reversion of the usual order of chemical affinities in the precipitation of copper by silver, were effected by a common electrical machine.

The chemical agency, therefore, of common electricity is thus proved to be the same with the power excited by chemical means. The author proved, likewise, that the decomposition of water (if this term may be allowed) could be effected by an electrical machine of a moderate size as clearly as by the pile of *Volta*, provided the wire employed be of a great degree of tenuity.

As the power of the galvanic pile appears to depend on oxydation, so also, the author thinks, does the excitement of the electrical machine depend on a similar process; for he found that by using an amalgam of silver or of platina, which are not liable to be oxydated, he could obtain no electricity. An amalgam of tin, on the contrary, affords a good degree of excitement. Zinc acts still better; but the best amalgam is made with both tin and zinc, a mixture which is more easily oxydated than either metal separately.

As a farther trial whether oxydation assists in the production of electricity, the author mounted a small cylinder, with its cushion and conductor, in a vessel so contrived that he could at pleasure change the contained air. When carbonic acid gas was substituted for common air, the excitement of the machine was immediately destroyed, but returned upon re-admission of atmospheric air.

The

The laſt paper in the preſent volume of *Tranſactions* is of ſo much practical importance, that we ſhall tranſcribe it entire. It contains ſome 'Further Obſervations on the Effects which take place from the Deſtruction of the Membrana Tympani of the Ear; with an Account of an Operation for the Removal of a particular Species of Deafneſs. By Mr. *Aſtley Cooper*.' In Mr. *Cooper*'s former paper, which was noticed in our laſt volume, he pointed out the effects produced upon the organ of hearing, by a partial loſs, or entire deſtruction, of the membrana tympani. From the facts therein detailed, it appears, that an aperture in the membrana tympani does not diminiſh the power of the ear, and that even a complete deſtruction of the membrane is not followed by a total deprivation of the ſenſe of hearing; a ſuppoſition which medical men have adopted, and common opinion has generally ſanctioned.

'Convinced of the importance of the ſubject, and deſirous, as far as my other avocations would allow, of purſuing my inquiries, I have, ſince the publication of that paper, examined more than twenty caſes of a ſimilar defect in the membrana tympani; and theſe inſtances have uniformly tended to confirm me in my former opinion, as to the uſe of the membrane, and the effects which follow from its loſs.

'Injury may ariſe to the membrana tympani, or its deſtruction take place, from various cauſes, of which the moſt common is, a ſuppuration in the meatus auditorius. In perſons of a delicate conſtitution and irritable habit, the wax ſecreted in the ear is liable to be hardened; this, by filling the meatus auditorius, gradually occaſions deafneſs, and then excites inflammation and ſuppuration. In this caſe, if no mode of relief be reſorted to, not only will the membrane lining the meatus, but alſo the membrana tympani itſelf, be deſtroyed, the ſmall bones of the tympanum diſ-

 charged.

charged, and sometimes considerable exfoliations produced.

'The membrana tympani is also not unfrequently injured by means of external violence.

'The membrana tympani is also sometimes broken by attempts to remove extraneous bodies, which have been thrust into the meatus auditorius. Children, in their thoughtless pranks, often introduce small stones, pieces of slate-pencil, and even pins, into their ears; in extracting which, I have known considerable lacerations made in the membrana tympani.

'The membrana tympani may be easily seen in some persons, by directing the rays of the sun, or a condensed light from a common lamp, into the ear; but this is not the case in all; for the meatus differs considerably in different persons, both in its depth and diameter.

'If the ear is clear from wax, the membrane has a bright tendinous appearance; and an aperture in it appears as a dark spot, which, by the silvery surface of the membrane surrounding it, is rendered distinctly perceptible. If there be an aperture, air also, upon blowing the nose with violence, will be forced with a whistling noise through the ear. The smoke of tobacco may be driven from the mouth through the ear; or water may be injected from the ear into the throat.*

'The effect produced upon the sense of hearing by this defective state of the membrana tympani, varies according to circumstances. If there be a small aperture only, leaving the malleus with its natural attachment, no difference in the power of the organ is perceptible; the membrane vibrates, and communicates its vibrations, as before. If the whole of the membrane be destroyed, and three out of four of the small bones of the tympanum be removed, an almost total deafness ensues; but the ear, after a time, begins to recover

'* It was formerly supposed, that there was naturally a communication between the external ear and the throat, through the membrana tympani; an opinion which it is now almost unnecessary to say is without foundation.

recover its powers, and, in the end, regains them, with that degree of imperfection only, which, in my former paper, I have described in the case of Mr. P——.* The following fact appears to confirm the truth of this statement. Mr. Radford, surgeon, of Newington Butts, informs me, that in the year 1779 he attended a woman who had an ulcer in the throat, by which a portion of the palate was destroyed, and the tonsils and Eustachian tube so much injured, that, in the attempt to swallow, a part of the liquid ran through her ears; yet, notwithstanding these ravages, she neither complained of any defect in her hearing, nor had the slightest appearance of deafness. In cases, however, where the discharge of matter which produced the destruction of the membrane continues, should a fungus arise on the periosteum of the tympanum, or exfoliation of the bones forming this cavity occur, and more especially should the stapes separate, very considerable deafness will be the consequence.

'When the membrane of one ear only is destroyed, a greater degree of deafness takes place in that ear, than would happen in either, were the membrane destroyed in both. This, as I stated in my former paper, probably arises from the disuse into which the imperfect ear falls, from its being less quick in its powers than the other; a conjecture which seems to be verified by the following fact.

'Mr. G——, a merchant in the city, lost, at an early period of life, a great portion of the membrana tympani of the left ear; and, as he heard somewhat better with his right ear than with his left, he was little in the habit of employing the latter, and considered himself at length as almost totally deaf in it. Becoming, however, in the month of December last, deaf in the right ear, and being obliged, in consequence, to employ the other, he found that the left ear was by no means de-

' *Vide Philosophical Transactions for 1800, page 152.

prived

prived of its powers; although he could force air from his mouth through that ear, and, if he suddenly thrust his finger into the meatus, the air was heard to rush through his nostrils.

'I feel a hope that the foregoing observations will tend to something more than merely to gratify curiosity, and will be productive, in the end, of lasting benefit; for they have induced me, in one species of deafness, to try the effect of an operation, which has, in several instances, proved successful.

'The deafness to which I allude is that which arises from an obstruction of the Eustachian tube; and the operation consists in puncturing the membrana tympani.

'The tympanum of the ear is formed like a drum; and, as a drum will produce very little sound, unless air be admitted by a hole in its side, so, in the usual state of the ear, the membrana tympani cannot perform its office, if air has not free access to the cavity of the tympanum. The air, thus essential to hearing, passes from the throat to the ear by the Eustachian tube; so that the membrana tympani is placed between two portions of air, the one contained in the meatus, the other in the cavity of the tympanum. Accordingly, if the Eustachian tube becomes obstructed, the air confined in the tympanum being unable to yield, the membrana tympani must cease to vibrate; and, thus, sound being no longer conveyed to the interior parts of the organ, a permanent deafness must ensue.

'There are several causes by which a closure of the Eustachian tube may be produced.

'It may arise, first, from a common cold affecting the parts contiguous to the orifices of the tube, and thereby preventing the free passage of air into the tympanum. The deafness thus produced, however, is often merely temporary. But the frequent recurrence of such attacks may produce permanent enlargement of the tonsils,

fils, which, by their preffure on the Euftachian tubes, will occafion a permanent deafnefs.

'In February laft, an inftance occurred, of a perfon who had thus been rendered deaf, fince the year 1793; and I have met with another inftance of deafnefs from a fimilar caufe.

'Secondly, The fcarlet fever occafions ulcers in the throat, which, in healing, frequently clofe the Euftachian tubes, thereby producing lafting deafnefs.

'As this fever occurs particularly in young perfons, who are but little fubject to a defective ftate of the nerves of the ear, the greater hope of relief may be entertained from the operation already mentioned.

'Thirdly, A venereal ulcer in the fauces, by the cicatrix it produces, often occafions a clofure of the Euftachian tube, caufing a deafnefs which nothing but the operation here fpoken of can relieve.

'Fourthly, I have known this clofure of the tube produced by an extravafation of blood in the cavity of the tympanum.

'Laftly, I have feen one inftance of a ftricture in the tube, which, although it did not entirely obftruct the paffage of the air, yet rendered it extremely difficult. To enable himfelf to hear, the gentleman who was the fubject of this difeafe was under the neceffity of forcing air, from the mouth, into the cavity of the tympanum, which pufhed the membrana tympani towards the meatus; then, preffing gently upon the ear, he forced out a part of the air which the tympanum contained; thus giving the membrane liberty to vibrate, and producing an immediate increafe in the power of hearing.

'The above mentioned are the moft common caufes of the clofure of the Euftachian tube; and I have reafon to think, from the experience I have already had, that they may all be remedied by puncturing the membrana tympani.

'I was

'I was led to this operation by reflecting that, as an aperture in this membrane did not appear to injure the power of the ear, and a ſmall opening would be ſufficient to admit a free paſſage of air to and from the tympanum, perhaps a ſubſtitute might be thus eaſily found for the Euſtachian tube, and the membrane, by ſuch an aperture, be reſtored to its natural functions. Opportunities were ſoon afforded me of trying the effects of this operation, and of putting my idea to the teſt of experiment. Of the inſtances by which it has been verified, the following appear to me moſt worthy of ſelection and record.

'*Caſe* 1. A woman about thirty-ſix years of age conſulted me, in December laſt, reſpecting ſome diſorder in her child. In attempting to converſe with her, I found her ſo extremely deaf, that it was with difficulty I could make her hear me. Queſtioning her upon the ſubject of her deafneſs, ſhe informed me that ſhe had been thus afflicted ſince the year 1793; and I found that it had ariſen from the tonſil glands becoming enlarged by a cold, which ſhe caught in the winter of that year. As ſhe was anxious to be relieved, I immediately punctured the membrane of the left ear, being that in which the hearing was moſt defective. The operation was no ſooner performed, than, to my great joy, and of courſe to her's, I found that, in that ear, ſhe could hear what I ſaid to her, without any particular exertion on my part to ſpeak loud. She ſtaid with me about half an hour; and, when ſhe left me, was capable of hearing every thing that was ſaid in the ordinary tone of converſation.

'*Caſe* 2. Ann Daley was admitted under my care, in Guy's Hoſpital, on the 21ſt of January, 1801. She was ſo deaf, that, unleſs words were ſpoken cloſe to her ear, it was impoſſible to make her hear them. She had been thus far deprived of hearing for the ſpace of ſix weeks; and the deafneſs had been occaſioned by ſome ulcers which had exiſted in the fauces. On the 25th of January, four days after her admiſſion into the hoſpital,

hospital, I punctured the membrana tympani of the left ear; having previously taken care (the better to ascertain the effects of the operation) to hold a watch to the ear of the patient, the beating of which she could not distinguish, unless it was pressed against her head. After the operation, I instantly repeated that experiment, and found that with the ear I had punctured she could distinctly hear the watch, though it was held at the distance of several feet; whereas, with the opposite ear, she was still unable to hear it beat, unless, as before, it was pressed against her head. Mr. Stocker, apothecary to the hospital, witnessed the effects of this operation.

'On the 28th of the same month, I performed the same operation on her right ear, in the presence of several medical gentlemen, who satisfied themselves as to the cause and degree of her deafness; the ear upon which I first operated having been purposely closed. As soon as the puncture was made, the trial with the watch was again resorted to; and she could hear it beat at the same distance as with the other ear; and could hear us speak, in the common tone of voice, as distinctly as we could hear one another.

'To ascertain with certainty whether she really heard the beating of the watch, I placed it at a considerable distance from her, and asked her if she still heard it. To which she answered, "Yes, perfectly." I then stopped the watch, without her knowing it; and, the question being repeated, she listened for a while, then said, "I must have been deceived; I do not hear it:" but, the moment I set it again in motion, she called out, "I "hear it now, and as well as I ever did in my life." In this state her hearing continues; the deafness having never, at any time, returned.

'The cause of this deafness was obviously in the throat. The disease had not existed sufficiently long to produce any other derangement in the ear; and the good effect of the operation was therefore so immediately apparent,

apparent, that it could not be doubted by the most sceptical observer.

'*Case* 3. Mr. Round, of Colchester, consulted Dr. Baillie respecting his son, Mr. John Round, aged 17, who had laboured, from his birth, under such a degree of deafness as would have incapacitated him from engaging in business. Dr. Baillie, having satisfied himself that there was no nervous defect in the ear, referred him to me. I found that this gentleman had been born with an imperfect state of the fauces, which rendered him incapable of blowing his nose; that the Eustachian tubes had no openings into the throat, and, therefore, that he was unable to force air from the mouth into the ear. The auditory nerves, however, were perfect; for he could distinctly hear the beating of a watch, if placed between the teeth, or against the side of the head; and he never had perceived any buzzing noise in his ears. I therefore advised him to submit to the operation of perforating the membrana tympani; to which he cheerfully consented. The moment this was done, a new world was opened to him; and the confusion produced by the number of sounds which immediately struck his ear, made him sink upon a chair, almost in a fainting state. From this state he recovered in about two minutes; and, finding that his hearing was completely restored upon the one side, he wished the operation to be performed upon the other; which was immediately done, with the same happy result, and without his experiencing the same confused sensation as before.

'Near two months after the operation, I had the pleasure to receive an assurance from him, that he had suffered no relapse, nor any inconvenience from the opening which I had made, and that his hearing continued perfect.

'*Case* 4. Mr. Brandon, of Upper Clapton, sent a person to me in January last, who had received a blow upon his head, which had occasioned symptoms of concussion

concussion of the brain, and was attended with a discharge of blood from each ear. From the effects which the blow had occasioned on the brain, he speedily recovered; but the deafness, which had immediately followed from the accident, continued. I cleared the meatus from the blood it contained, without any relief being derived to the patient; and, suspecting that a quantity of blood was lodged in the tympanum, and the vibration of the membrane thus prevented, I some days after punctured the membrana tympani. Upon withdrawing the instrument, some dark-coloured blood appeared on its point; and, whenever I examined his ear afterwards, there was the same appearance of blood mixed with the wax of the ear, which continued to discharge for about ten days after the operation, during which period the hearing was gradually restored. I have formerly known instances of permanent deafness from this cause; and I think it not improbable that the blood thus effused has become organised, and continued to fill the cavity of the tympanum.

'The operation to remedy the species of deafness here described, consists in passing into the ear a canula, of the size of a common probe, in which a trocar is concealed; the canula is to rest upon the membrana tympani, and the trocar is then to be thrust through the membrane.

'The trocar should be so adjusted as not to pass more than $\frac{1}{8}$ of an inch beyond the canula, to prevent its reaching the opposite side of the cavity of the tympanum. Should it however touch the periosteum of the tympanum, it can be productive of no serious harm. The aperture should be made in the anterior and inferior part of the membrane, under the manubrium of the malleus, which must not be injured in the operation; and it is therefore necessary that the operator be acquainted with its exact situation.

'Though

'Though the membrana tympani be vascular, the vessels are so small that they bleed but little; and therefore, if much blood is discharged, the operation cannot have been properly performed.

'In an ear otherwise healthy, the operation is attended with so slight a degree of pain, that, when it has been performed in one ear, the patient expresses no unwillingness to submitting to it in the other. The sensation which it occasions is momentary; and no subsequent inconvenience of any kind arises.*

'As this operation will not afford relief in any cases of deafness, except such as arise from a closed Eustachian tube, I am anxious that it should be performed in those only which are clearly of that description. The criteria by which I judge whether the tube is closed or open are the following.

'First, If the person in whom it is suspected to be closed should feel, in blowing the nose violently, a swelling in the ear, from the membrane being at that time forced outward, the tube is open; for, when closed, no such sensation is produced.

'Secondly, The Eustachian tube may be closed, yet the beating of a watch may be heard, if it be placed between the teeth, or pressed against the side of the head; and, if it cannot be heard when it rests upon the teeth, this operation cannot relieve, as the power of the auditory nerves must have been destroyed.

'Thirdly, It is right to inquire if the deafness was immediately preceded by any complaint in the throat.

'Lastly, In a closed Eustachian tube there is no noise in the head like that which is hereafter described as accompanying nervous deafness.

'The causes of deafness are extremely numerous; and many of those which affect only the meatus auditorius,

'* If the ear has been previously irritated by stimulating applications to the meatus, the operation will then be painful; it is therefore proper to wait until the inflammation has subsided.

the

the membrana tympani, the cavity of the tympanum, and the Euſtachian tube, admit of relief from ſurgical aſſiſtance.

'But there is one ſpecies of deafneſs in which, as it depends, like the gutta ſerena of the eye, upon an affection of the nerve, it would be as abſurd to expect relief could be derived from any operation upon the membrana tympani, as it would to ſuppoſe that a perſon diſeaſed in the optic nerve could be reſtored to ſight by extracting the cataract. This ſpecies of deafneſs occurs more frequently than any other, happening generally in old perſons; but ſometimes alſo, in the delicate and irritable, in the earlier ſtages of life: I have known it produced by anxiety and diſtreſs of mind. Its approach is generally gradual: the perſon hears better at one time than at another; a cloudy day, a warm room, agitated ſpirits, or the operation of fear, produce a conſiderable diminution in the powers of the organ. In the open air, the hearing is better than in a confined ſituation; in a noiſy, than in a quiet ſociety; in a coach when it is in motion, than when it is ſtill. A pulſation is often felt in the ear; a noiſe, reſembling ſometimes the roaring of the ſea, and at others the ringing of diſtant bells, is heard.

'This deafneſs generally begins in a diminiſhed ſecretion of the wax of the ear, which the patient attributes to ſome unuſual expoſure of the head to cold; and this continues ſo long as the diſeaſe remains. In the commencement of this complaint, it may be cured by the application of ſuch ſtimulants as are capable of exciting a diſcharge from the ceruminous glands; which ſtimulants ought to be introduced into the meatus, for that purpoſe. If theſe are uſed ſo as to irritate, without exciting a diſcharge, they are rather prejudicial than otherwiſe. But if the organ has been long neglected, and the diſeaſe has been ſuffered to make

conſiderable progreſs, I believe that no hope of cure can be rationally entertained.*

‘ There is another cauſe of deafneſs, to which I fear no art of the ſurgeon can apply a remedy; this is, an alteration of the contents of the labyrinth. The interior part of the ear, called the labyrinth, is naturally filled with water, upon which the auditory nerve is expanded; and it is by the undulations of this fluid that impreſſions are made upon the nerve, and conveyed to the brain.

‘ If a ſolid ſubſtance be generated in this part of the ear, inſtead of the fluid, the powers of hearing will be deſtroyed, or at leaſt very conſiderably impaired. From the following diſſection, this would appear to be at leaſt one cauſe of deafneſs in thoſe who are born with this infirmity, and who are alſo dumb, unleſs aſſiſted by particular inſtructions.

‘ Mr. Cline, being requeſted by Dr. Walſhman, of Kennington, to examine the head of a young man who had died of a fever, and who had been born deaf, and was conſequently dumb, found, upon diſſecting the organs of hearing, all the parts perfectly formed, and as uſual in a healthy ear, except the veſtibule, cochlea, and ſemicircular canals; theſe were filled with a ſubſtance of the conſiſtence of cheeſe, inſtead of the fluid which they uſually contain. From a defect like this, deafneſs could not fail to ariſe; for, as the ſubſtance occupying the place of the watery fluid could not be made to undulate by the motions of the membrane of the feneſtra ovalis and rotunda, all impreſſions upon the auditory nerve were completely prevented.

‘ I have thought it right to deſcribe the foregoing inſtances of deafneſs, becauſe they are liable to be confounded with that which ariſes from a cloſed

‘ * I have, in ſeveral caſes of this kind, made trial of the operation of opening the membrana tympani, without finding that it afforded any other relief than that of diminiſhing the noiſe in the head, which always accompanies it.

Euſtachian

Euftachian tube. Others might perhaps have been added; but various profeffional engagements have prevented me from devoting fo much time to this fubject as I am confident it merits. I have, however, the pleafure to reflect, that feveral individuals have been reftored to fociety who were before almoft incapacitated from its enjoyments. I hope others will be induced, by this fuccefs, to fecond my feeble efforts, and to direct their attention to a fubject which appears to be of the higheft importance, and to have been too much neglected by medical men; for a knowledge of the ftructure of the ear is by no means general in the profeffion, and ftill lefs are its difeafes underftood. A prejudice has prevailed, that the ear is too delicate an organ to be operated upon, or, as it is commonly expreft, *tampered with;* and thoufands have thus remained deaf for the reft of their lives, who might have been reftored to hearing, had proper affiftance been *early* applied. But this prejudice, it is hoped, will now be done away; fince it appears, that the part which has been thought moft effential to hearing, viz. the membrana tympani, may be injured by difeafe, or may be broken by violence, without a deprivation of the fenfe of hearing, and that, even when this membrane is entirely deftroyed, another is found to perform its functions; fo that the powers of the organ have ftill been, in a confiderable degree, preferved.

'Let it alfo be recollected, as a farther encouragement, that in the operation I have mentioned, little pain is felt, no dangerous confequences follow, and, even if it is fometimes performed unfuccefsfully, the patient is left with the fame capacity as before of receiving relief from other remedies.'

Art. LXXXII. *The Principles of Surgery.* By John Bell, *Surgeon.* Vol. I.

(*Continued from page* 433.)

IN the 12th *Diſcourſe* the author treats of Fractures of the Limbs, a ſubject on which, it is juſtly obſerved, no two books correſpond, no two authors agree, even on the general points of practice, though more has been written on it than on almoſt any other. There is no rule nor principle yet eſtabliſhed; the practice has been almoſt continually changing without having been ever materially improved.

If there be any great and general error, the author obſerves, in antient or in modern ſurgery, it is that of bandaging a fractured limb. Bandages were introduced for the purpoſe of regulating the quantity, the form, and the conſiſtency of the callus. 'Every thing plainly ſhows, that the older ſurgeons believed callus to be a mere inorganic concrete, a fluid poured out from the extremities of the ruptured veſſels, which was ſoon hardened into bone; that it ſet or hardened like ſtucco or Paris plaſter, and if not diſcompoſed during this proceſs, hardened into the conſiſtence of bone. They deſcribed it always as " an exſudation of the bony juice," and certainly imagined it to run like lead from a plumber's ladle, and, like it, to concrete after being poured out from the ends of the bones. They thought callus a juice which diſtilled from the ends of the broken bones as gum from trees; ſometimes too profuſely, ſometimes too ſparingly. The reunion of broken bones, and the hardening of this callus, they familiarly compared with the glueing together of two pieces of wood, or the ſoldering of a broken pot. The callus they ſuppoſed to be a peculiar juice circulating in the bones, ready to be poured out, ſo as to to re-unite them when fractured; and they imagined that it ſometimes flowed into the joints ſo as to cauſe anchyloſis,

loſis, and often caked and knotted about the broken bones ſo as to form a clumſy, prominent, unſightly lump. They imagined that callus was a juice which infallibly congealed in a marked period of time, and therefore they appointed particular days for undoing the bandages of each particular fracture. They ſuppoſed that its exuberance might be ſuppreſſed by a firm and well rolled bandage, its knobby deformities corrected by pillows and compreſſes; that it might be thumbed and modelled by preſſure into a perfect ſhape; that it might be ſoftened by friction and oils ſo as to be twiſted and ſet anew; and it is believed even at this day, univerſally believed, that if the callus be diſcompoſed in the ſlighteſt degree while forming, it may perhaps never ſet. All their notions were mechanical, their moſt favourite illuſtrations were juſt what I have ſtated, their whole doctrine was abſurdly conſiſtent, not with Nature, but with itſelf; and this doctrine has been the apology for all contrivers of machines, from the time of Hildanus down to Dr. Aitken and Mr. Gooch, the great mechaniſts of the preſent day!'

Theſe miſtakes and theſe bad practices are the reſult of our ignorance of the proceſs of Nature in conſolidating broken bones, and of our not underſtanding the nature of the callus itſelf. The proceſs of uniting the fractured ends of a bone can be compared with nothing ſo properly as the original formation of bone itſelf. A bone is a well organized part of a living body; that matter, which keeps its earthy parts together, is of a gelatinous nature; the earth of bone, to which it owes its hardneſs, ſtrength, and all its uſeful properties, is depoſited in the interſtices of this gluten, undergoing a continual change and renovation; it is inceſſantly taken up by the abſorbents, and ſecreted again by the arteries. It is this continual abſorption and depoſition of earthy matter which forms the bone at firſt, and enables it to grow with the growth of the body; it

is this unceafing activity of the veffels of a bone which enables it to renew itfelf when it is broken or difeafed; it is in fhort by various forms of one fecreting procefs that bone is formed at firft, is fupported during health, and it is renewed on all neceffary occafions. Callus is thus a regeneration of bone, organized by the fame action with that by which the original bone is formed. The callus begins to be formed after a fracture, as foon as the continuity of veffels is re-eftablifhed, and their healthy action renewed. Bone is a fecretion (as, indeed, the whole folids of the living body are but a fecretion) originally depofited by the arteries of the bone, which arteries are employed in renewing it continually. It is not a concrete juice depofited merely for the occafion of filling up the interftice betwixt fractured bones, but a fair regeneration of new and perfect bone, with its needful apparatus of arteries and veins, and of abforbents, by which its earthy matter is continually changed like that of the contiguous bone. Callus, indeed, could hold no connexion with the contiguous bone, were it that inorganic concrete which was once fuppofed.

It refults from this doctrine, that callus is eftablifhed in a renewed continuity of veffels; that a foft, flexible, and vafcular fubftance is interpofed betwixt the ends of the broken bones; that a fort of temporary gland is organized for the generation of bone, or, to fpeak not figuratively, but philofophically, it feems as if, by this reunion of all the adjoining parts, the original conftitution and proper organization of bone was reftored. But for fome time the fecretion of earthy matter is imperfect; it is infant bone, foft, flexible, of an organization perfect for all the purpofes of bone, but as yet delicate and unconfirmed; not a mere concrete, like a cryftallization of a falt, which, if interrupted in the moment of forming, will never form; not liable to be decompofed by a flight accident, nor to be deftroyed entirely even by a rude fhock! Young and unformed callus is a fubftance foft and flefhy, fo that it yields; ligamentous

ligamentous in its confiftence, fo that it is not very eafily injured; and in its organization fo far perfect, that when it is hurt, or the bony fecretion interrupted, the breach foon heals like the adhefion of foft parts, and fo the callus becomes again entire, and the procefs is immediately renewed.

From what has been faid, it appears how little foundation there is for the fears which are generally entertained, that the flighteft motion of a fractured limb would difturb or totally ruin a callus juft about to form. When a bone is broken a fecond time, it reunites more eafily than at the firft: the callus, unconfirmed, is very foft, and highly vafcular: when it breaks again, many of its veffels are ruptured, but fome are only elongated, and it rarely happens that its whole fubftance is torn. When we confider the perfect vafcularity of a callus (which continues many years, perhaps ever afterwards, more vafcular than the bone to which it belongs), its ligamentous toughnefs at the period of the limb's being fubject to injury a fecond time, the excitement which muft follow this partial rupture, and the full and vigorous circulation in veffels accuftomed to the fecretion of bone, we underftand why a fractured callus is more fpeedily reunited than a broken bone, where nothing is prepared for the geration of a new bone.

In cafes where, from the obliquity of the fracture, the limb is fhortened, and it is impoffible at firft to retain the fractured ends in their places, it is advifable, the author thinks, inftead of endeavouring to keep the limb in a conftant ftate of extenfion, a thing, in fact, impoffible, to extend it from time to time, till the bony union become fufficiently firm to fupport it of the proper length. Thofe, he obferves, who, in confequence of accidents, have had their limbs fet again from time to time (the bones having flipt paft each other), have had the limb ftraighter and longer than thofe who have had the limb fet once for all, and not unbandaged till near

the end of the cure. Thoſe limbs alſo have been leaſt ſhortened which have been ſet and diſturbed and ſet again. Thus Paræus, who did not believe that there was really ſuch an accident as a fracture of the neck of the thigh bone, being called to an old lady, who had by a fall injured the haunch joint, found what he imagined to be a luxation. It was the ſhortening of the leg that made him imagine that the hip was luxated; and when he felt the great trochanter high upon the hip, he imagined that to be the head of the bone He extended the limb till he thought he had puſhed the head of the bone into its ſocket, and brought the two legs to be of equal length, and then applied his ſpica bandage. But two days after, upon viſiting the lady, he found her complaining of great pain, and her leg was ſhortened again, and then it was only that the limb was properly ſet. This leg, reduced at the diſtance of ſome days from the accident, and extended from time to time, was cured without ſhortening.

Hildanus, too, having ſet the thigh bone of a little girl of 8 years of age, the thigh contracted again on the 14th day, the bones paſſed each other, and the thigh was ſhortened; yet this is the caſe in which Hildanus ſucceeded the beſt. He made a perfect cure.

Mr. Bell then lays down the following general rules for the treatment of fractures, as far as regards bandage and poſition.

'From this hiſtory, you obſerve, I draw no raſh concluſions. I do not propoſe to break limbs when they are almoſt healed, that they may heal faſter; nor to take, even a crooked and unſerviceable limb and lay it acroſs the knee like *La Motte*, but I do with perfect confidence adviſe you to leave off bandages, which you ſee were originally deſigned for no other uſe than to mould and faſhion the callus; to reject thoſe long compreſſes which were bound ſo firmly round the limb for the ſame purpoſe; to uſe ſuch ſplints only, as when laid along the whole limb, may ſerve to maintain its poſture,

poſture, and preſerve it ſteady, and to tie thoſe ſplints ſlightly with tapes; to lay out a broken thigh (ſince it cannot be commanded by ſplints) ſmoothly upon a pillow, and to venture, without fear of hurting the callus, to extend the limb anew, and lay it ſtraight when it is diſordered and ſhortened. In a ſimple fracture of the leg, it is almoſt ſufficient to lay it on a pillow; and you have done every thing when you have laid it lightly and eaſily in a ſmooth ſplint of paſteboard: then the patient himſelf is almoſt able to keep it right. In fractures of the arm, the part hangs naturally in the beſt poſture, and requires but two ſplints of this paſteboard, rolled gently with a linen roller; and in fractures of the fore-arm alſo, the limb preſerves its natural length and natural form; it requires merely to be laid upon a long ſplint of paſteboard, with a ſmaller ſplint laid above, the two ſplints ſecured with ſlight tapes or ribands, and the arm ſlung round the neck.

'Diſmiſs, then, thoſe anxieties about the manner of rolling, and the expreſs degree of firmneſs which the bandages ſhould have; look no longer thus anxiouſly at the points of the fingers or toes, to ſee whether the bandage preſſes properly ſo as to make thoſe parts ſwell: you are not to draw the roller ſo as to ſtraighten the limb up to the very point of producing gangrene, nor to uſe any bandages that are formidable from their ſtraitneſs, nor any that are even firm, except in children, in drunken people, or in thoſe who are delirious with fever or pain.'

The author next treats of the various characters and diſtinctions of fractures, dividing them into *ſimple*, *compound*, *compound with luxation*, and *gunſhot* fracture. In theſe points he follows in all material reſpects the rules of the prevailing practice. Before, however, treating in detail of the different ſpecies of fractures, an entire *Diſcourſe* is devoted to the conſideration of the anatomy, accidents, and diſeaſes of the hip joint, and another to the conſideration of fractures of the thigh

thigh bone, an accident productive of peculiar difficulty, from the violent contractions of the muſcles and conſequent ſhortening of the limb.—In ſtrict order, perhaps, theſe ſhould have been ſubjoined to the more ſimple forms of injury, inſtead of preceding them.

A very minute and accurate account is given of the hip joint, its ligaments, capſule, and lubricating apparatus; a perfect knowledge of all which is undoubtedly neceſſary, to enable us to underſtand the various, and frequently complicated, injuries to which it is liable. In this the reader is often materially aſſiſted by a reference to ſimple but eaſily underſtood figures. 'The diſorders,' the author obſerves 'which need to be diſtinguiſhed from each other are, fracture, luxation, bruiſe of the acetabulum, and the ſcrophulous diſeaſe of boys, ſeated unqueſtionably in the bones; and the chief ſigns are, the length of the limb, the direction of the toe, the place of the trochanter, the elongation or ſhortening of the limb, and the manner in which it turns when moved by the ſurgeon.

'First, We are aſſured that the thigh bone is luxated downwards, when the accident has been a twiſt of the limb, or a blow upon the very top of the great trochanter; when the thigh is elongated three inches or more; the toe turned outwards, in a ſplay-foot poſture, and kept ſtraddling away from the body with great pain. This luxation is accompanied with a proportioned diſplacement of the great trochanter; the hip is flattened, and in lean people you can diſtinguiſh the head of the bone rolling in the groin, though not in fat ſubjects, nor in women whoſe pelvis is broad and flat.

'Secondly, We diſtinguiſh luxation upwards by the remarkable ſhortening of the limb, by the ham being crooked, the knee of the luxated ſide turned cloſe in under the thigh of the ſound ſide, and the toe turned inwards or almoſt backwards. The great trochanter riſes very high, and the thigh is flattened in this caſe

as

as much as the hip is in the laſt mentioned. The patient lies on his ſound ſide almoſt on his face, and when you take hold on the leg which ſtands up, and begin to turn it, you, by laying your hand over the moſt tumid part of the haunch, feel firſt (becauſe it is the moſt prominent point) the rolling of the trochanter; and then by carefully examining and turning the thigh bone, you at laſt diſtinguiſh the head of the bone.

'Thirdly, When the neck of the thigh bone is fractured, the limb is remarkably ſhortened, the trochanter is higher than its natural place, the thigh is flattened, the pain is exquiſite, and the general appearance is that of a thigh bone luxated upwards! but the moment you take the limb in your hand, you diſtinguiſh this from all other accidents; for while the limb is ſo remarkably ſhortened as to leave no doubt of ſome very eſſential injury having happened, it yet turns ſo eaſily as to prove that it is not luxated, and indeed it turns ſo looſely as to prove that the limb has not that degree of ſteadineſs which the natural connexion of the ſhaft of the thigh bone with its head and neck ſhould give. The limb is ſhortened, but it is eaſily lengthened; the toe is turned out, but it is eaſily turned in again; in ſhort, the manner in which it moves will ſatisfy you at once that the ſhaft is ſeparated from the head of the bone. If crepitation be not among the immediate ſigns of this fracture, it is becauſe the bones are not, as in other fractures, oppoſed to each other; if crepitation be felt afterwards, it is only when the limb is extended, and the bone ſet, or, in other terms, the broken parts regularly oppoſed to each other.

'Fourthly, When the patient has fallen upon the trochanter, or received a blow, when the head of the bone has been ſtruck down into the ſocket with violent pain, when the patient becomes inſtantly lame, and lies in a crooked poſture, with the knee of the injured limb bent in under that of the ſound (in order to raiſe up the head as much as poſſible from the inflamed

ſocket

ſocket where its preſſure occaſions pain); when along with theſe appearances we are perfectly ſenſible that the limb, though crooked, is not ſhortened; when we find, that though when moving it occaſions dreadful pain, yet it does move eaſily and ſteadily, we may be aſſured that the fall has occaſioned merely a bruiſe in the acetabulum. In this caſe, the patient lies crooked in bed, the pain is exquiſite, the patient cannot bear to have the joint touched, or the limb moved; the ſlighteſt motion is terrible to him, to ſtretch out the limb is excruciating. The ſurgeon has not leave to handle the limb freely, or is prevented by his own timidity, and by the ſhrieks of the patient; he miſtakes the nature of the injury, makes cruel attempts to reduce a bone which is neither fractured nor luxated, and does eſſential injury to a joint already much injured; perhaps he never doubts of the limb being luxated or fractured till, after ſome months of the ſevereſt miſery, the pain remits, the patient begins to walk, and recovers at laſt the uſe of his limb.

'This mere bruiſe of the acetabulum is unqueſtionably the diſeaſe which Petit deſcribes, where he ſays that he has often prevented it coming to any height by applying aſtringent ſolutions, and defenſives made of alum, and white of egg, with ſpirits of wine. Reſt is of chief ſervice; but reſt need hardly be recommended to one in ſuch exquiſite torture, whoſe pains are aggravated by the ſlighteſt motion.

'Fifthly, When a ſcrophulous boy under eighteen years of age has laboured for long under a diſeaſe of this joint, where there is great lameneſs, little pain, a puffy ſwelling, an elongation of the limb! if there come at laſt acute pain, hectic fever, ſymptoms of internal ſuppuration, and at laſt an abceſs upon the hip or groin, you know that it is the conſtitutional diſeaſe, that it is ſeated in the bones, that it is analogous to the white ſwelling of the knee, or curvature of the ſpine; but, unlike the diſeaſe of the knee joint, this of the hip cannot

cannot be amputated, and the boy muſt go through the fiery ordeal, and often dies from fever and irritation, great profuſion of matter, and caries of the bones. If he ſurvive, it is uſually with a limb emaciated, crooked, hanging in air, and fixed by the anchyloſis of the femur with the haunch bone. The chief cauſe of ſuch diſeaſe is the ſcrophulous condition of the ſyſtem, the imperfect oſſification of the bones, the great extent of diſeaſed ſurface, and from the occaſional ſhocks which this great joint ſuffers, in conſequence of its ſupporting continually the whole weight of the body. The chief danger of the diſeaſe is the boy feeling but too little pain to make himſelf or his parents ſenſible of the danger: if it be not chiefly in conſequence of the preſſure and motion that ſuch diſeaſe goes on to the laſt ſtage of caries, yet certain it is, that, under the preſſure of the whole weight of the body, ſuch a diſeaſe cannot be cured; the only chance, then, of recovery, is from wine, generous diet, cold bathing, cauſtics, iſſues, and abſolute reſt.'

On the ſubject of fracture of the thigh bone, an accident ſo frequently productive of deformity and lameneſs, the author criticiſes with much acumen the complicated but generally uſeleſs machines, which ſurgeons have employed their ingenuity in framing. He ſhews that, from the natural obliquity of the thigh bone in relation to the pelvis, all its fractures, even in its middle part, are naturally oblique; and thoſe thick and fleſhy muſcles which ſurround the thigh bone at its upper part, and give the thigh its conical form, contract with ſuch irreſiſtible force, that when the thigh bone is broken acroſs, at the cervix, or obliquely in its ſhaft, no power of machinery, which the natural ſtructure of the limb, or the courage and conſtancy of any patient can endure, is able to overcome.

Rejecting, therefore, the various modes of extenſion recommended by ſurgical writers, as both intolerable to the patient, and inadequate in their effects, the author

author refers us, in cafes where the limb is retracted and fhortened, to the long fplint of *Duverney*, as it is called, not becaufe it was peculiar to him, fince it was ufed by his contemporaries and by older furgeons, but becaufe he ufed it of that uncommon length that it was almoft a ftilt rather than a fplint, extending not merely along the fractured limb, but along the whole body. It was a ftiff fplint made of thin board or of bend leather; it was laid along the body, reaching almoft from the arm-pit to fome diftance beyond the extremity of the heel. The patient was in a manner laid upon the fplint, which was fixed by a fucceffion of circular bands furrounding the pelvis, leg, and thigh; one or more turns of a bandage went, like the tail of a T. bandage, round the fork under the hip, to fecure the hold upon the pelvis; while on the outfide again, the top of the long fplint was let into a bandage or folded towel, which was paffed round the thorax. Thus was the fplint fixed and prevented from flipping upwards, while the limb was kept extended by the circulars furrounding the knee and ancle; and though fometimes there was laid oppofite to this a fhort fplint upon the infide of the thigh, yet that feems to have proceeded from the unwillingnefs of furgeons to forfake old and approved methods all at once, for it was from the long fplint only that they could expect to fteady the thigh.

This is a method which fhould not be fuddenly forgotten. The long fplint has indeed the difadvantage of keeping the whole limb in an extended pofture, but then it makes the whole limb one piece as it were with the body; it prevents rolling of the thigh bone, fecures in fome degree the extended ftate of the limb, and enables the patient to be turned or moved on every neceffary occafion without danger of difplacing the fracture: it has been ftill the refource of the furgeon in his difappointments and difficulties; and Mr. *Deffault*, among others, though he boafts much of his own peculiar

peculiar method of fixing the body towards the head, and extending the limb towards the foot of the bed by lacs or bandages, ſeldom neglected to uſe, at the ſame time, the long ſplints of Duverney, to which, no doubt, was owing much of his ſucceſs.

The author then proceeds to deſcribe the various ſpecies of machinery which have been recommended at different times, but as no body now thinks of uſing them, it is needleſs to follow him here: he concludes this part of his ſubject with the following judicious remarks.

'In reviewing the hiſtory of thoſe machines, there is one phenomenon which often preſents itſelf, that always, after each diſappointment in uſing the moſt curious machines, ſurgeons have returned to the moſt ſimple practice. This cannot be from indolence or diſaffection to the high intereſts of their profeſſion; it cannot be from the want of a great variety of complicated machines that they return to the moſt ſimple: it is, indeed, in the very moment of the higheſt expectation that we ſee their ſudden turning back to the ſimple practice. The principle of this, I think, lies deeper than would be ſuppoſed at firſt ſight, and is the very argument with which I would cloſe this ſubject.

'The reſiſtance by which a limb is ſaved from being retracted is *friction*; if this friction be all at one ſingle point, it muſt be cruel, but if diffuſed all over the limb, it may be endured. In thoſe ingenious machines which I have juſt explained, there is much ſhow and appearance of power, but it is all concentrated in one or two points; the limb is graſped by two or three circulars; the force is of a kind which the ſoft parts cannot bear; the retracting power (viz. the contraction of the muſcles) is continually acting, while the ſoft parts below the graſp of the inſtrument are ſwelling more and more, and the parts immediately ſurrounded by the circulars are giving way; the bands need

need to be frequently tightened, the ſide irons and ſcrews need to be lengthened; the whole machine is gradually ſlipping. The ill ſucceſs of machinery which touches but at points demonſtrates to us that ſuch kind of reſiſtance cannot be made permanent like the contraction of the muſcles, which always in the end prevails! The firſt ſlackening of the machine is the beginning of that yielding which allows the inceſſant reaction of the muſcles to prevail by ſlow degrees

'The contraſt of the leg laid out ſmoothly upon a pillow is, with myſelf at leaſt, very perſuaſive; there is no pain, no ſhow of reſiſtance, and yet there is much. Thoſe authors pronounced the higheſt eulogium on the method of Mr. Pott, when they objected to it; "That to lay the thigh out upon a pillow, was to do no more than to commit the affair to Nature."

'When a limb is ſimply ſtretched out upon a well made pillow, firſt, It is not tortured, and ſo the muſcles are not excited to contract. Secondly, When it is ſtretched upon the pillow, its own weight (ſwelled and lame, and unapt to action, unleſs when excited) fixes it, and every contraction which tends to ſhorten the limb is encountered by a proportioned degree of friction from every point of the outward ſurface of the limb. Thirdly, When the limb is merely extended upon its pillow, the reſiſtance is great; but when, beſides being merely extended upon its pillow, it is laid in a well framed caſe, ſtiff, adapted to the ſhape of the limb, bending gently, ſo as to allow of a relaxed poſture, lined with a woollen cloth, flannel, or fuſtian, to increaſe the friction, and the bend of the ham ſecured by the bending form of the caſe, and each hollow padded up with little cuſhions of tow! another ſplint laid on the oppoſite ſide of the thigh, the whole braced down gently with ribands, and then both the thigh and its caſe bound to the pillow by tapes! the fracture is at once very ſteady and very eaſy. The reſiſtance to contraction is hardly perceived, becauſe it is ſo generally

nerally diffufed ! it is fenfible only in its effects, not by exciting pain ! there is more of gentle uniform refiftance than could be derived from thefe torturing machines, which have feldom been fcrewed about a leg without being very foon thrown afide, and much greater than can be procured by that cruel extenfion which Deffault has decorated with the fine title of *permanent.*

' I have proved in a former Difcourfe, that a thigh may be fafely extended from time to time. In this prefent Difcourfe it has been obferved, that what has been called permanent extenfion is actually an extenfion renewed from day to day. When the thigh is laid in the way now fuggefted, we have the fracture always under our eye ; we do not go through the cruel and formal operation of extending with lacs and pulleys, and numbers of men pulling upon a broken limb, which we are fenfible we cannot retain in its extended pofition ; we ftretch it gently, model it with our hands, lay it out fmooth, ftretch and replace it from time to time. We now find by experience, that where force is required it is ufelefs ; that it is only where force is not required that we fucceed ; we find, that, after a gentle extenfion, the limbs of boys and girls, or of women, of weakly fubjects, and of old people, lie pretty fteady ; we find, that occafional extenfion corrects every occafional contraction ; we have no difficulty, except in the thigh of a ftrong and mufcular man ; and we find, that, after buckling the moft powerful machines about the thigh of a ftrong and mufcular man, we are invariably foiled, and obliged to defift. It is only a big unwieldy thigh that is much retracted ; and we find by experience that, after fome time, the ftrenuous contractions of fuch a thigh fubfide, its irritable refiftance to our gentle extenfion ceafes, it falls into a quiefcent ftate, allowing itfelf to be foothed, and gently drawn out and laid along upon its pillow ! I have often obferved, that a big and mufcular thigh at laft

laſt ſettles down, as it were, in its place, and takes a ſeat and poſture, ſo that it is not eaſily diſcompoſed by any accidental ſpaſm, contraction, or unwary motion of the patient.

'These explanations I owe to you as young and inexperienced ſurgeons, and will venture to foretel that, after being like others ſeduced to uſe powerful machines, to this ſimple proceſs will you at laſt return. The fractured thigh bone ſeems in a ſtrong man to be retracted by natural powers, which nothing but rude force could ſucceſsfully oppoſe; ſurgeons have delighted in force! their machines are but too powerful! We know by experience that the reſolution of man cannot ſuſtain the tortures of a limb extended by machinery for weeks. We queſtion not the power of machines in extending a fractured limb, but it is much to be queſtioned whether the ſyſtem be able to ſuffer ſuch protracted torture; if it be, it is at leaſt a phenomenon which I have never witneſſed, nor expect to ſee. Wherever extreme violence is required, I hold it to be a ſign that violence will not ſucceed.'

In the fifteenth and laſt chapter, the author lays down rules for the management of ſimple, compound, and gunſhort fractures, as deduced from the practice of the beſt ſurgeons, and from the doctrines explained in the preceding diſcourſes. Laſtly, the queſtion of amputation is conſidered, with regard to its neceſſity in certain caſes of injury; a point on which ſurgeons have differed *in toto*, ſome maintaining the propriety of having recourſe to it, under certain circumſtances, and others condemning it altogether. One general rule, however, as the author juſtly obſerves, is not ſufficient to guide us in ſo momentous a point. In one ſeaſon or country, in one hoſpital, or after one particular battle, the men are healthy; the wounds heal as by miracle, and few amputations are required; but in another battle, in unhealthy camps, in ſickly ſeaſons, in places where

where the men are expoſed to cold, moiſture, infection, and want, all thoſe whoſe limbs the ſurgeon attempts to ſave, periſh.

In reſpect of this great and intereſting point of practice, then, there can be no abſolute rule in nature; nor is it poſſible that any ſingle man ſhould be qualified, by practiſing in various climates, ſeaſons, and ſituations, to lay down any abſolute rule. No man of good ſenſe will venture even to imagine himſelf capable of aſcertaining this queſtion; and the perſon the moſt inclined to eſtabliſh abſolute aphoriſms on this difficult point, would be leaſt of all entitled to the public confidence. Time, place, and circumſtance, always modify the queſtion, and give a peculiar and individual character to each particular accident. Thoſe who in their writings maintain the moſt oppoſite opinions, would not probably debate one moment, if brought to the bedſide of a patient to conſult about a particular caſe.

The ſimple fractures, for the management of which directions are here given, are thoſe of the humerus, fore-arm, clavicle, ſternum, ribs, ſpine, lower extremity, patella, olecranon, and rupture of the *tendo achillis*, which laſt is not improperly ranked among the fractures. The directions on theſe ſubjects are in general judicious, but have not ſufficient novelty to require our particular notice. The fracture of the patella, however, may be conſidered as an exception. This is an accident which very frequently terminates in incurable lameneſs; and the cauſes of this, with the moſt advantageous mode of treatment, are here well explained. This is of the greater conſequence, too, as, in a late popular *Syſtem of Surgery*, the neceſſity of bringing the fractured ends of the bone cloſely or even nearly into contact, is denied.

'In fracture of the patella,' Mr. Bell obſerves 'the chief difficulty is to preſerve the bones in perfect contact with each other, inſomuch that Dr. Hunter, unable to account for the difficulty of accompliſhing a per-

fect cure, imagined that the failure of the ufual procefs in this particular inftance could be owing to nothing elfe than fome part of the membranes furrounding the joint falling in betwixt the two bones, fo as to prevent them coming into proper contact.

'In this particular fracture the leg muft be kept extended to the utmoft; the upper piece of the fractured patella, which is retracted to a great diftance above the knee, muft be fmoothed and thumbed downwards, and put in as clofe contact as poffible with the lower fragment. To put it in clofe contact is the difficulty; it feems to be fo at the time of your operation, and you are only convinced that the pieces have not been in contact when the cure fhould be complete; for, when the fwelling has fubfided, when the patient begins to walk, a hollow is feen betwixt the two ends of the bone, and a ligament of fome length is felt uniting them. The patient lofing the pulley-like projection of the patella or rotula (and the extenfor mufcle being fhortened), is never able to ftand on one leg, never able to bear up the body on that limb, never able to mount a ftair without carrying that leg before, and is never out of danger of forgetting himfelf; trufting the weight of the body upon that limb, falling backwards, and fo breaking the other patella, or fnapping the fame one a fecond time, as I have feen happen very often.

'To preferve the bones in abfolute contact, and prevent this imperfection in the cure, is almoft impoffible. The fwelling, before you are called, is fo great, that in many cafes bandage cannot be applied for fix or eight days. When the fwelling is gone, the pieces of the bone cannot be made to approach each other, nor can the bandage, from the remains of the general puffy fwelling, be applied clofe to the bones. The bandaging has been attempted in various ways. The common bandage is a belt of leather fplit like the common leather retractors, with a fmall opening in the middle of the flit for receiving the patella; each of the

fides

ſides or ſemicircles of this opening is padded up with leather, ſo as to make a pretty firm compreſs of a circular form; and when the bandage is buckled round the knee, and drawn firm, the two ſides of the ſlit are of courſe drawn ſo cloſe together, as to preſs the two pieces of the patella betwixt them.

' If you are in the country, where no ſuch bandage is to be procured, you may, with fully as good effect, bind the broken patella in the following manner: firſt, If you have to carry your patients any length of way, I do not know of a better bandage than a hand towel, or ſomething nearly as thick, put round the knee like a figure of 8; nor indeed can any thing perhaps be preferable as a permanent bandage. Having carried your patient home, and laid him in bed, you firſt take a thick, flat, and very long, ſhaped compreſs, which is to ſerve as both compreſs and bandage, and which of courſe muſt be a yard and a half in length; you lay the middle of this compreſs over the upper or aſcending part of the patella, and you preſs it down upon the patella with both hands; you then bring it round the thigh above the knee joints, then croſs it behind under the ham, then croſs it again upon the fore part of the knee, and then ſecure it. The ſecond part of your operation is performed thus: you take a very long and firm linen roller in your hand, you proceed to thumb down the patella into the cloſeſt contact poſſible with the loweſt piece, perhaps you put another compreſs over the upper broken piece, and, your roller being a two-headed one, you take one head of the roller in each hand, you preſs the middle of it firmly down upon the compreſs; then your aſſiſtant preſſes the thumbs of both hands upon the upper piece of the patella, with the deſign of puſhing it very cloſe down, and when he has puſhed it as low as poſſible, you make your firſt turn of the roller under and behind the ham, to ſecure what he has gained; and you continue at your diſcretion turning your double-headed roller in

figure of 8 round the joint as long as you think you are gaining any thing in reſpect either of cloſeneſs or ſecurity.

' But I have often been inclined to think, that the thicker compreſſes and bandages are, the more are they inclined to ſlip; as, for example, in reducing a luxation, where the lacs and bandages put about the leg or arm are ſo clumſy that they cannot but ſlip. Perhaps then it would be as well, if, inſtead of this clumſy compreſs, we were to take a ſmaller compreſs of about three fingers broad, and not quite the length of a finger, and, connecting it with a ſhort roller like a tourniquet compreſs, apply it over the upper or retracting part of the patella, and ſecure its place by pinning the roller, juſt as you do that of the tourniquet compreſs. Next, it would be well to take a broad two-headed roller, lay the middle of it over the compreſs, and make one or two turns in figure of 8, depreſſing the patella, and aſcertaining its poſture ſtill further, but without putting any clumſy thickneſs of bandage round the limb. Then (the part being in ſome degree ſteadied) I would take two bandages of an ell long, and lay them along, one along the inſide, the other along the outſide of the limb; the one end of each band is laid up along the thigh, and the other down along the leg: I would then begin the application of the roller, by which I meant to ſecure the upper part of the bone; I would take a thin but very firm linen roller, ſingle-headed, and ſeveral yards long; I would turn it round and round the lower part of the thigh, juſt above the joint, immediately above the bone, ſo as to take a firm hold of the bone above the condyles, embracing the longitudinal bandage at the ſame time, and this roller ſhould not be very broad— leſs than a hand's breadth. This circular roller being thus applied, and having a firmer hold of the patella, and being ſo tight, that, upon pulling it down, the patella will be pulled down, you turn down the upper end

end of the longitudinal roller, or that which lies up along the thigh; and the longitudinal roller lying thus under the circular one, embraced by each turn of it, when you pull upon the longitudinal bands, you draw down the circular bandage, and thus depreſs the upper broken piece of the patella, till it almoſt meets and touches the lower piece; and as there are two longitudinal bandages under the circular (one on each ſide), you may carry the two longitudinal bandages under the ſole of the foot, and tie them together. To give a more complete pull upon the patella, you might, if you pleaſed, lay under the turns of the roller a third longitudinal bandage exactly in the middle, which being tied like a ſtirrup under the ball of the great toe, would perfectly preſerve the extended poſture of the limb.'

Art. LXXXIII. *Obſervations on the Arguments of Profeſſor* Ruſh *in favour of the inflammatory Nature of the Diſeaſe produced by the Bite of a Mad Dog. By* James Mease, *M.D., of Philadelphia.* 8vo., 62 pages. Philadelphia, 1801. [From New York Medical Repoſitory.]

NUMEROUS have been the treatiſes, and as various almoſt the ſpeculations, on the ſubject of the diſeaſe occaſioned by the bite of rabid animals, which we have had occaſion to notice in the progreſs of our labours; but, though each writer has generally propoſed a plan of treatment differing in ſome reſpects from thoſe before ſuggeſted, we unfortunately ſtill have to lament a total want of ſucceſs in our efforts to cure this direful malady. It was only a few years ago, that Dr. *Ruſh* of *Philadelphia* maintained, with his uſual zeal and ardour, that hydrophobia, like tetanus, was a diſeaſe of relaxation and debility, and to be treated

fuccefsfully only by tonic and ftimulant remedies: this view of the fubject has been more lately adopted, with fome flight modification, by our ingenious countryman, Dr. *R. Pearfon*, of Birmingham.* In the further profecution of his inquiries, however, the American *Profeffor* not only abandoned this opinion, but adopted one of the very oppofite defcription, confidering the difeafe in queftion nearly to refemble malignant fevers, which he believes to refult from excefs of action, and like them to demand a bold ufe of antiphlogiftic, or, to ufe the Tranfatlantic term, *depleting* remedies.

Dr. *Meafe*, the author of the pamphlet above announced, oppofes this doctrine, adhering to the opinion formerly advanced by the Profeffor, and ftill confidering the difeafe as effentially founded in debility. In the courfe of the difcuffion, the author follows Dr. *Rufh* through a long train of argument, fometimes queftioning the authenticity of his facts, and fometimes combating the inferences drawn from them. In oppofition to the doctrine which the Profeffor had endeavoured to eftablifh, that the difeafe of all rabid animals is of the nature of a maligant fever, Dr. M. infifts that, in many important particulars, the analogy contended for is not fufficiently clofe and conftant; and that, although fome circumftances of rabies refemble malignant fever, there are other leading ones in which no fuch affinity can be traced.

Profeffor Rufh had alfo maintained that the difeafe in the human fpecies, produced by the bite of a rabid animal, is a malignant fever. This he fuppofed to be proved by the fimilarity of the fymptoms; by the acceffion of the difeafe at various intervals after the reception of the infection into the body; by fimilar appearances of the blood drawn from perfons labouring

* See his pamphlet entitled "The Arguments in favour of an inflammatory Diathefis in Hydrophobia confidered," &c.; noticed in a former volume of our Review [vol. 5, p. 292].

under

under the two difeafes; by the agreement between them in point of duration; by the equally rapid putrefaction of bodies dead of both difeafes; and by the difcovery of like appearances in fuch bodies, when examined by diffection.

In reply to this doctrine of analogy between hydrophobia and malignant fever, as manifefted by the circumftances of the two difeafes in the human fyftem which have juft been mentioned, Dr. M. contends, that, if the fimilarity of fymptoms, to a certain extent, be admitted, there ftill exifts a diffimilarity of fymptoms in many important particulars, which brings the difeafe in queftion to a nearer refemblance of what are called *nervous* than *febrile* affections; that, as to the interval between the application of the remote caufe and the attack of the difeafe, Profeffor Rufh's analogy muft be acknowledged to fail, as hydrophobia from canine virus, unlike malignant fevers, has been known to come on at all intermediate periods between ten days and nineteen months after the infliction of the bite; that appearances of blood drawn in difeafes are too variable and fallacious to afford any dependence; and that, even if they deferved any degree of reliance, there is ftill a deficiency in the proof of the appearances infifted upon by Profeffor Rufh; that mere famenefs of duration, if admitted in the fulleft degree, is too loofe an analogy to allow any inference of moment to be drawn from it; that the rapid putrefaction of bodies dead of hydrophobia, though by no means an univerfal occurrence, is yet fo common in cafes of fudden death without lofs of much blood, as to juftify no fuch conclufion as that which Profeffor Rufh attempts to draw; and that, as to the fimilarity of the phenomena exhibited by diffections, which are admitted in fome degree, but which Dr. M. fuppofes to be ftated in too ftrong and unqualified terms, they may be accounted for on the principle of the irregular diftribution of blood, and of nervous influence which remarkably takes place in this difeafe, and in fome other analogous nervous affections.

Dr.

Dr. M. proceeds, in the next place, to examine the validity of Profeffor Rufh's proofs of his theory, derived from the cure of the difeafe by blood-letting. After a careful examination of the cafes, as defcribed by the reporters of them, he fufpects that many of them were in reality other difeafes, miftaken by the obfervers for hydrophobia from the canine virus; and that, as to the reft, the ufe of many other remedies at the fame time makes it doubtful how far the cure was to be afcribed to blood-letting. It is difficult, and perhaps impoffible, in the prefent ftate of our knowledge of this difeafe, to determine how far blood-letting may be directly ufeful or pernicious, and how far it fhould be employed as auxiliary or rejected as detrimental to other remedies. That it has been ufed to a great extent, in a multitude of cafes, without any apparent advantage, is abundantly evident. And, upon the whole, we are difpofed to believe, from many phenomena of the difeafe, as well as from its general want of fuccefs, that this remedy, ufed alone or in combination with others, in any manner hitherto diftinctly known, may be properly placed on the long lift of thofe which experience has adjudged to be ineffectual in the treatment of hydrophobia. How far its powers may hereafter be efficacioufly applied as preparatory or relative to other remedies, we prefume not at prefent to decide.

The method of cure which Dr. M. is difpofed to recommend follows next in order. In his former effay on this difeafe he had recommended the ufe of opium in very large dofes; but, from fome examples of its inefficacy in the largeft dofes, he now thinks it unavailing to truft in that remedy. 'In its place,' fays he, 'I would recommend the ufe of the powdered leaves of ftramonium, or their extract, in dofes of two grains for an adult. By that quantity Dr. Cooper found the pulfe "increafed in frequency at firft, and that it afterwards became full and quick, and produced giddinefs, *warm fkin*, moift hands, and *fleepinefs*." A defect of due energy in the heart, wakefulnefs, and cold

cold ſkin, are ſymptoms that conſtantly attend the diſeaſe, and the two laſt are the ſources of much diſtreſs. Hitherto no remedy has had the leaſt effect in removing them. Their cure will greatly aſſiſt toward the removal of the whole complaint. This may be effected, in my opinion, by the *ſtramonium*, if given *early* in the diſeaſe. It ſhould be exhibited in ſuch doſes as will *powerfully affect the ſyſtem*, and repeated as often as a previous doſe has ceaſed to act. During the ſuſpenſion of the ſymptoms, bark and wine ought to be given, and the doſe gradually increaſed, ſo as to keep up a regular excitement, and produce a permanent vigour in the ſyſtem. The quantity of wine may be unlimited. Indeed, the only rule that ought to be obſerved with reſpect to it is, to *give it in as large quantities as the ſtomach will bear, and until it produces the deſired effect.*

'In caſe, however, the above remedies cannot be obtained or exhibited, I ſhould have no heſitation in trying another plan, which has ſeveral arguments to authoriſe the experiment, although, at firſt view, it may appear to be attended with danger. It is, *to excite a ſtrangury by means of cantharides.*

'The principle of the animal economy, firſt unfolded by J. Hunter, of one irritation curing another, is daily and amply confirmed in practice, and its application in the preſent diſeaſe ſeems highly probable. Without referring to the many inſtances afforded in illuſtration, I may adduce one diſeaſe which is nearly allied to the preſent, viz. tetanus. When this is occaſioned by the leſion of a nerve from a ruſty nail, or other pointed inſtrument, we find it readily yields to an irritation of the wounded part, raiſed by ſcarification, and the application of hot turpentine, marine ſalt, or cantharides; and in the progreſs of the diſeaſe, or when it ſucceeds the expoſure of the body to dews and night air, after being heated in ſummer, an irritation of the ſalivary glands by mercury as readily proves effectual.

effectual. A knowledge of theſe facts, and a conviction of the truth of the principle, would have been ſufficient to prevent my heſitating to try the plan I propoſe; but I am now confirmed in my opinion of its utility and perfect ſafety, in conſequence of the cure, by its uſe, of a deſperate caſe of tetanus, by Dr. S. Brown, of Lexington, Kentucky, who lately communicated the hiſtory to Dr. Ruſh. The patient, a lady, was nearly exhauſted by the diſeaſe, when her judicious phyſician gave her the tincture of cantharides, which, by exciting a temporary inflammation in the ſtomach and bowels, and producing a ſtrangury, effected a cure. The moſt dangerous pleuriſies have alſo been cured by the late Dr. Lieper, of Maryland, after the common remedies had failed, by exciting a ſtrangury by means of the ſame tincture mixed with camphorated ſpirits of wine; and, when combined with tincture of Peruv. bark, and given with the ſame view, it has been recommended by experience in the hooping-cough.

'The recommendation of the remedy in this diſeaſe produced by the bite of a mad dog is not new. Morgagni mentions its general uſe for the cure of the diſeaſe in Germany: his remark is confirmed by a late author. A Sileſian peaſant alſo acquired much reputation for the cure of the diſeaſe; and, on the purchaſe of his ſecret by the King of Pruſſia, in 1777, the baſis was diſcovered to be the *meloë proſcarabæus et majalis* (oil beetle). All the inſects of the meloë tribe poſſeſs a bliſtering quality. In a diſeaſe which has hitherto ſo generally proved ſuperior to all the efforts of medicine, it is a duty to try every plan which promiſes the leaſt ſucceſs. The one I now urge is ſupported by a juſt theory, a cloſe analogy, and, if we admit the German authority, I may add, is proved by experience.'

In a diſeaſe ſo dreadful and fatal as the hydrophobia almoſt invariably has proved, every new ſuggeſtion in regard to the treatment, merits conſideration, and the remedy here recommended deſerves a ſerious trial.

ART.

ART. LXXXIV. *A Memoir concerning the Diſeaſe of Goitre, as it prevails in the different Parts of North America.* By BENJAMIN SMITH BARTON, *M.D., Profeſſor of Materia Medica, Natural Hiſtory, and Botany, in the Univerſity of Pennſylvania, and one of the Phyſicians of the Pennſylvania Hoſpital.* 8vo., 94 pages. Philadelphia, 1800. [From New York Medical Repoſitory.]

NOT only are the inhabitants of the weſtern continent afflicted with the more *common* diſtempers of Europe and the other quarters of the globe, but the rarer and more ſingular complaints to which the human conſtitution is there liable, are manifeſting themſelves in North-America. In a widely extended country, reaching from the confines of Acadia to the limits of Florida, there exiſts a great variety of climate. And in the range from the ocean to the ſtream of the Miſſiſſippi, the diverſity occaſioned by alteration of latitude is exceedingly increaſed by intervening and local circumſtances, which checquer the ſcenes and the ſeaſons in a remarkable manner. From the low plains in the vicinity of the Atlantic, through the gradual riſings, to the ſummit of the Blue, the Allegheny, and Apalachian Mountains, and the deſcent thence to the water-level on their further ſide, the earth preſents a ſurface changing almoſt perpetually. The high peak, the gentle declivity, the abrupt precipice, and the deep ravine, exhibit their reſpective peculiarities. From the lofty and ventilated mountain-expoſure, and the dry land agreeably alternated with hills and dales, the tranſition is gradual to the pent-up valley ſcarcely reached by the breezes, and the dead level where water ſtagnates, and fogs and exhalations overhang the watery marſhes, the diſmal ſwamps, and the tracts in their neighbourhood. In ſome diſtricts the great ſtrata of the earth conſiſt chiefly of granite, and of the ſeparate

rate bodies which constitute that mineral compound; in others the predominant layers are of arenaceous matter, compacted and hardened into stone. Now the eye of the traveller, day after day, as he journeys along, beholds *slate*; and the different species of schistic fossils lie thick beneath his feet; and then again he proceeds, for an equal distance, over beds of calcareous earth, exhibiting the forms of lime-stone and marble. Here the eye surveys a wide and barren extent of land; there it dwells upon a tract rendered fertile by the overflowing of rivers, and the gradual deposition of decaying animal and vegetable substances for ages. To these differences of situation are to be added the great changes to which the weather is liable, from moist to dry, from tempest to calm, and from excessive cold to almost intolerable heat, in a region influenced by Ontario, Erie, Huron, and the other lakes, on the one side of the interjacent mountains; and by the ocean, and the gulphs of Mexico and St. Lawrence, on the other.

In such a country, it may be expected that the human constitution will suffer many and variegated diseases. As far as there is a coincidence or similarity of morbid causes, in this as in the other hemisphere, distempers of a like kind can hardly fail to break out. And this disposition of the physical powers to debilitate or disfigure the body in America, may be facilitated by the predisposition to a given distemper, or the actual existence of it, in an emigrant from any part of Europe in which scrophula, phthisis, or goitre prevails.

To the investigation of the latter of these distempers, as it occurs in North America, the author of the present tract has turned his attention.

Dr. Barton found the goitrous swelling of the neck among the Oneida and the Brother-Town Indians, and describes it as occurring on the German Flats, at Fort Drayton, and at Henderson Town, among the white inhabitants, in the neighbourhood of the Mohawk River.

'Some

'Some of the most remarkable cases of the disease are in a Dutch family which lives upon the north side of the Mohawk River, immediately opposite to Old Fort Schuyler. This family consists of a father, a mother, and four or five children. Every one of them is afflicted with the goitre. The swellings occasion some of them to look hideous. This family removed from the river below this, to the place where they now dwell, about fifteen years ago, at which time they had nothing of the disease among them.'

He found it to be frequent, also, in the military tract, especially in the town of Manlius, in the Onondago-hollow, and the neighbourhood of the Salt Springs, affecting both Indians and whites. Though infants at the breast are not exempted from it (such cases being rare), yet it is much more common among adults. Persons who have removed into the country where it prevails have become subject to it at a very advanced age. Females are more liable to it than males; they are especially its victims. It is said, also, to affect brute animals, especially sheep and young calves, in the above-mentioned town of Manlius, in New York. Within this State, the author thinks its existence limited between the little falls of the Mohawk, eastward, and the settlement of the Tuscaroras, near the extreme westernmost boundary, in the vicinity of the Great Cataract of Niagara. Its northern and southern extent he has not been able to define; though he observes it has occurred in Lower Canada, between St. John's and Montreal—on the Connecticut River in New Hampshire—in the county of Bennington, in Vermont—in the Cohoss country in Connecticut. Within the territory of Pennsylvania, it is stated as occurring at Pittsburgh, on the waters of the Allegheny and French Creeks, at Sandusky, on the Monongahela, and among the Indians on Big Beaver Creek: also on the River Muskingum, among the Aborigines; and here, as at the last-mentioned places, principally affecting the women

women and girls. There have been ſeveral caſes, too, among the Canadians of Detroit, and among the ſettlers at St. Vincennes, on the River Wabaſh.

In the part of the author's inquiry which reſpects the cauſe of goitre, he examines the opinion of De Luc, that it proceeds from water impregnated with earthy ſubſtances, prone to form tophous concretions; of Coxe, that it is cauſed by *tuf*, or calcareous earth, held in ſolution by the water which the goitrous inhabitants of the Alps conſtantly drink; and, *of the inhabitants of the State of New York*, that it is owing to the quality of the water of the country, which is highly charged with lime-ſtone. Theſe, which form what may be called the CALCAREOUS HYPOTHESIS, Dr. B. with great candour and impartiality, examines and rejects. He even doubts whether the water drank by the people of a region or diſtrict, in any manner, occaſions this complaint, and quotes the great Haller, of Berne, as poſſeſſing a ſimilar ſcepticiſm.

He then conſiders the notion of the goitre being produced by *ſnow-water*, or the water of melted ſnow, and ſhows its impoſſibility very ſtrikingly; the opinion of Gautiere, that it ariſes principally from expoſure *to cold*, and the drinking of very *cold* water; and that of G. Forſter, that it is cauſed by drinking of water deprived, by freezing, of its *fixed air*; to both which he offers deciſive objections. He alſo examines and rejects the ideas of this diſeaſe being induced by the drinking of water ſupplied by ſprings *near beds of foſſil coal*, or of the ſame fluid impregnated *by certain vegetables*; as alſo the notion of its being produced by *inſects infeſting the water*, or the ANIMALCULAR HYPOTHESIS; and that of its origin from *coarſe* and *unwholeſome food*, except as ſuch diet may operate as a prediſpoſing cauſe, with ſeveral other ſpeculations.

The learned author next diſcuſſes the theory of M. De Sauſſure, according to which goitre is cauſed *by a heated and ſtagnated air*, owing to the confined ſitua-

tion

tion of the valleys in which the difeafe frequently appears in Switzerland. This, however, he does not adopt, becaufe, in America, the goitre is not confined to valleys, but prevails in fome of the high and level plains of the country; and in fome of the more deep and narrow valleys it is altogether unknown.

Laftly, Profeffor Barton, with great caution and modefty, offers his own opinion on the exciting caufe of goitre, which is, that it is a miafm of the fame fpecies as that *which produces intermittent and remittent fevers, dyfenteries*, and fimilar complaints. The author expreffes himfelf thus:

'Do intermittents and remittents prevail in thofe parts of the countries of North America in which the goitre is moft commonly met with? I have already faid that they do. Many facts, however, muft be collected before this queftion can be anfwered as extenfively as it ought to be. Meanwhile I fhall mention fome of thofe diftricts in which both thefe fevers and the difeafe of which I am treating are very common.

'I have already obferved, that the Onondago Valley, where goitres are frequent, is unwholefome. Intermittents and remittents, and thefe fometimes of a very malignant kind, are frequent here. Thefe complaints are frequent in Manlius, Pompey, and other parts of the military tract. They are frequent along the Mohawk and Connecticut Rivers; between St. John's and Montreal; about Detroit; on the Mufkingum; and in almoft all thofe parts of our country in which the goitre is found. It has, indeed, been faid, that intermittents are unknown at Pittfburgh. This is not ftrictly true. On the contrary, thefe complaints are known to exift in that place, and have evidently increafed within a few years.

'In the prefent ftate of our information, it will be difficult to prove that the goitre does actually owe its origin to the fame caufes which induce intermittent fevers. We are certainly not yet prepared to decide upon this fubject (as philofophers fhould decide upon

every ſubject which they undertake to inveſtigate) with caution. I may add, that many difficulties oppoſe themſelves to the conjecture which I have thrown out. In particular, it is not eaſy to conceive how a general cauſe, ſtimulating the ſyſtem, and inducing the cold and hot ſtages, and other phenomena of fevers, ſhould concentrate its action ſo completely upon the thyroid and neighbouring glands of the head and neck, and give riſe to the diſeaſe of goitre. Perhaps, however, an extenſive view of facts relative to the production of diſeaſes by the *miaſmata* of marſhes, would ſerve to ſhow the immenſe variety of ways in which theſe miaſmata affect us, and the multifarious diſeaſes which they induce in man and other animals. There is ſomething very capricious in the operation of theſe agents. And I do not know that it is more inconceivable, that the effluvia of which I am ſpeaking ſhould eſpecially affect the thyroid gland, and induce goitre, than that they ſhould eſpecially affect the parotid glands, producing mumps; or the liver, producing hepatitis.

‘ It may, perhaps, give ſome additional weight to the theory which I have propoſed, to obſerve, that the marſh miaſmata of ſome parts of our country exert a particular action upon the glands of the neck and throat. Kalm has given ſome account of a diſeaſe called by the Swedes the “ſtitches and burning,” which, at different times, has committed great havock at Penn’s Neck, in Jerſey. “ It was (ſays our author) a true pleuriſy; but it had a peculiarity with it, for it commonly began with a great ſwelling under the throat and in the neck, and with a difficulty of ſwallowing.”

‘ The complexion of many goitrous perſons, eſpecially thoſe in whom the diſeaſe has ariſen to a conſiderable height, is an additional circumſtance in favour of the opinion which I have advanced. “ Their complexion (ſays De Sauſſure, ſpeaking of the Crètins) is a yellow approaching to brown, from which probably, they obtained the name of *Marons,* which is given to them in the valley of Aoſte.”

‘ I was

'I was informed that, in the State of New York, thoſe perſons who are affected with goitre are commonly exempt from intermittents, though in the midſt of perſons labouring under theſe latter complaints. If this be a fact, it would rather ſerve to ſhow that the goitre and the intermittent are owing to the ſame cauſe.

'I am far from imagining that the preceding facts completely eſtabliſh the origin of goitre from the miaſmata of marſhes. I have offered this opinion merely as a conjecture or hypotheſis. I cannot, however, help ſuſpecting that future and more extenſive inquiries will eſtabliſh the fact, that there is a very intimate connection between the diſeaſe in queſtion and the exhalations from marſhy grounds. Perſuaded I am, that there is a neceſſary connection between the diſeaſe and a moiſt atmoſphere.

'M. Foderè is of opinion that a warm and moiſt atmoſphere is the cauſe of the goitre. This writer, whom I have ſo often quoted, made his obſervations in Maurienne, where the diſeaſe is extremely common, perhaps more ſo than in any other part of the world. It is remarkable that the goitre prevails to the greateſt degree in the weſtern parts of North America, where many obſervations have conſpired to ſhow, that there is a greater quantity of moiſture in the atmoſphere than in the countries between the Atlantic and the Allegheny Mountains. "From a variety of obſervations (ſays Mr. Andrew Ellicott), I am convinced, that the atmoſphere in the weſtern country, and particularly in the vicinity of the lakes, contains a greater quantity of moiſture than in the middle Atlantic States. The wooden works which contained my inſtruments were always uncommonly ſwelled, and frequently very much injured in that country, though conſtantly defended from the rain, and occaſionally expoſed to the ſun. The ivory and wood of my ſectors, with braſs joints, always expanded above the metal. This

expanſion was not ſudden, but effected by ſlow degrees."

'"My own obſervations, which will be detailed at length in another work, coincide with thoſe of the ingenious gentleman juſt quoted. The greater degree of moiſture in the neighbourhood of the lakes, is, perhaps, the beſt explanation of the fact which I have already mentioned, that, in general, the goitre "prevails to the greateſt degree in the neighbourhood of the lakes of the country, or about the firſt ſources of the rivers which ariſe near theſe lakes."

'Mr. Ellicott has likewiſe obſerved, that "fogs are very common, and of remarkable denſity," on the Ohio and Allegheny, and their branches. This accords with my own obſervations. I cannot, however, agree with Mr. Ellicott, that theſe fogs do not contain "any portion of thoſe noxious miaſmata which are ſo frequently combined with the fogs on the eaſtern ſide of the mountains." On the contrary, I am perſuaded, that the fogs of the weſtern, as well as of the Atlantic country, are often very inſalubrious. I know, at leaſt, that many parts of the country along the Ohio, and other weſtern waters, are very unhealthy. I do not doubt that the denſe fogs are one great cauſe of this unhealthineſs; and, I believe, that ſuch fogs are inſalubrious, chiefly by reaſon of the miaſmata which they contain. This is not the place to examine the contrary opinion, which has been adopted by Mr. Ramel.'

The work is concluded by a ſhort chapter on the medical treatment of the diſeaſe; and blood-letting, purging, quick-ſilver, burnt ſponge, ſulphure of potaſh, and ſeveral other remedies, are mentioned. An appendix of ſixteen pages contains a variety of learned and inſtructive matter.

ART.

Art. LXXXV. *An Historical Sketch of the important Controversy upon Apoplexy; comprizing what appeared in Nos. 34 and 35 of the Medical and Physical Journal: and also the Correspondence between the Author and* Mr. Crowfoot, *Published in the Ipswich Paper, with additional Notes and Comments, both critical and explanatory. By* R. Langslow, *M.D., A.M., &c.* 8vo., 52 pages, price 1*s* 6*d.* London, 1802. Cadell and Davies.

FROM the contents of the ample title page given above, the reader will perceive, that nearly the whole of the present pamphlet has been already before the public. The additional matter, consisting merely in a few explanatory notes and comments, relate rather to the subject of personal difference between the parties, than to that of apoplexy itself. Whenever the question comes to be discussed on its own merits, and free from personal allusion, we shall be happy to pay it all the attention which its importance merits. At present we must decline entering further into it.

Art. LXXXVI. *The New Chemical Nomenclature, selected from the most distinguished modern Writers on Chemistry, designed for the Use of Students in Pharmacy, Druggists, Apothecaries, and others. It consists of two Parts: the first of which exhibits the scientific Arrangements in English and Latin: and the second contains the same in English, disposed in alphabetical Order. In both Parts the old Names will be found on the right hand Column, opposite the new. By* C. Pye, *Chemist.* 8vo., 35 pages, price 1*s* 6*d.* London, 1802. Longman and Rees.

THE nature of this little pamphlet is sufficiently explained above. The terms of the new chemistry

miſtry are not yet, perhaps, ſo familiar to ſtudents, but that ſome utility may be derived from a work like the preſent; we may therefore recommend it to their peruſal. A few errors, or rather inaccuracies, might be pointed out; but they are of no great importance.

Art. LXXXVII. *The Outlines of the Veterinary Art; or, the Principles of Medicine, as applied to a Knowledge of the Structure, Functions, and Œconomy of the Horſe, the Ox, the Sheep, and the Dog; and to a more ſcientific and ſucceſsful Manner of treating their various Diſeaſes. The whole illuſtrated by anatomical Plates. By* Delabere Blaine, *Profeſſor in Animal Medicine.* Two vols., 8vo., 1400 pages, price 1*l* 4*s.*

THE former work of the author was briefly noticed in our ſixth volume: in that his chief attention was confined to the anatomy of the horſe, with a few phyſiological and pathological remarks occaſionally interſperſed. In the preſent he has taken a wider range, and treated, in a compendious way, of the ſtructure, functions, and management of the horſe, as well as of the moſt important diſeaſes to which he is liable: nor are thoſe of the other domeſtic animals wholly overlooked.

The work is divided under three general heads; the firſt of which, indeed, many will conſider as in a great meaſure foreign to its immediate object; as it contains a general hiſtory of medicine from its origin, with a view of the leading theories that have appeared heretofore, as well as thoſe in common reception at preſent. The author next proceeds to give a hiſtory of the veterinary art in general, with a particular account of its ſtate and improvements in this country; by which the reader

reader will be enabled to judge how far we ſtand removed from other nations in this particular, and what they may be ſuppoſed to have borrowed from us, or we to have learned from them, on the ſubject. This is followed by an examination of the general properties of matter, and an outline of comparative anatomy, or a compariſon between the ſtructure and functions of the various animated beings ſurrounding us.

The ſecond diviſion of the work is occupied with the anatomy of the horſe, including the phyſiology, or knowledge of functions. This part of the work is materially illuſtrated by engravings, the execution of which has conſiderable merit.

The third diviſion is allotted to the practical part of the veterinary art, or a deſcription of the diſeaſes of the *horſe*, *ox*, *ſheep*, and *dog*, with the moſt approved modes of cure. From the length of the anatomical part of the work, the preſent part is perhaps more compreſſed than might be wiſhed. The claſſification adopted by the author will materially aſſiſt the ſtudent in this branch of medicine, who is too apt to be miſled by the barbarous and unmeaning jargon adopted in general in books of farriery.

The hiſtory of veterinary medicine in Great Britain here given will perhaps intereſt the reader, as it will enable him to eſtimate the merits of the chief Engliſh writers on the art of farriery; it will beſides afford a fair ſpecimen of the author's ſtyle and manner, which, if not perfectly correct, are yet ſufficiently clear and intelligible.

'The veterinary art in this has been ſimilar to that of other countries; buried in the groſſeſt ignorance; and moſt of our improvements we have been content to borrow from our neighbours. During the 17th century, manege riding was very prevalent in this kingdom, which we likewiſe copied from our continental friends, and conſequently we had German

 and

and French riding-maſters in abundance, who took the direction not only of the actions, but of the health of the animal into their hands; by which domeſtic improvement became neglected, and foreign publications alone ſtudied. But as horſe-racing and hunting became prevalent, ſo the manege declined among us; and the treatment of diſeaſes remained yet in the hands of thoſe immediately placed about the animals: which as grooms and blackſmiths are uſually leſs enlightened than riding-maſters, ſo it was a retrograde ſtep to improvement; and now and then only was there a feeble and individual attempt to reſcue this noble art from oblivion: which effort ſoon ceaſed to attract attention, and ſtill ſooner to excite amendment.

'Blundevill appears to have been one of the firſt writers worthy of notice in this country: he lived in the reign of Elizabeth. His work appears chiefly a compilation of ancient writers, of which he tranſlated ſeveral into Engliſh; his ideas were fettered with his attachment to the manege, and conſequently introduced the errors and abſurdities with which that ſyſtem was then prevalent. There is a very full account of him in Mr. J. Lawrence's publication. We are informed of other writers of inferior merit ſubſequent to him; as Maſcal, Martin, Clifford, Burdon, on whom Bracken publiſhed notes, and others. Nearly about this time lived the celebrated Gervaſe Markham, whoſe treatiſe on farriery, through ſtrictly empirical, and groſsly abſurd, went through numerous editions, and became the guide and way-poſt of almoſt every practitioner, though it is more than probable that Vegetius at that time had been tranſlated into Engliſh, who would have proved a much ſafer guide. Mr. Lawrence gives ſome copious extracts from this book, by which its merits may be appreciated.——It is now a few years ſince, being deſired to examine a horſe belonging to Lord Chetwynd, his groom, as a matter of great favour, indulged me with a ſight of his receipt

book: among which were the following from Markham, which he aſſured me with much earneſtneſs had never failed him:—*A noſtril drink:* rue ginger, ſweet oil, and vinegar, mixed and injected up the noſe, cures all dry colds, and ſtuffings in the head. *A drink for farcy:* rue, hyſſop, and wormwood, mixed in urine. *A receipt for the pole evil:* urine with a hot iron quenched in it. For farcy or glanders: ſew up quickſilver in one ear: with many other remedies and recipes, equally efficacious and ſcientific. It will therefore not be wondered at, when it is proved that theſe receipts are yet practiſed among grooms, that Lord Pembroke ſhould ſay, "Whoever lets his farrier, "groom, or coachman, ever mention any thing more "than water gruel, a clyſter, or a little bleeding, "may be certain to find himſelf ſhortly on foot:" yet this wretched publication was tranſlated into French, 1666. Some years after this appeared the *Vineyard of Horſemanſhip*, by Michael Baret, of which I know nothing. During the reign of James the Firſt, there were many other leſſer publications, ſome of them originals, and ſome tranſlations from the Italian, German, and French. Among the former, De Grey is more generally known. The next in order appears to have been the ſuperb work on horſemanſhip by the Duke of Newcaſtle, and which was tranſlated into French in 1737, and ſoon after into Dutch, German, and Italian, and appears to have been the moſt elaborate compoſition on this ſubject ever wrote, but has little connection with the veterinary ſcience. Succeeding this, appeared *The Anatomical Treatiſe on the Horſe*, by Snape, who was farrier to Charles II. His plates are copies from Ruini, and ſome of them from Saunier; but not ſo well executed: his deſcriptions are likewiſe taken from theſe authors; and where he has deviated from them, he has made the human body his guide. In his deſcription of the eye, he mentions nothing of the membrana nictitans, and deſcribes the

the omentum as reaching to the pelvis; with numerous ſimilar inſtances: it is ſaid he projected a larger work on diſeaſes, which he never lived to execute. About this time an epidemic contagion raged among the black cattle of this country, which produced many publications on the ſubject; one of which was much read, and is ſtill in many perſons' hands, by Dr. Layard, which was afterwards tranſlated into French.

"In the reign of George I. Sollyſel's celebrated work was tranſlated from the French, which had in ſome meaſure an influence in combating the general errors at that time prevalent; for at this time, though Vegetius was well known in this country, the practice of farriers was groſsly barbarous and ignorant.

"It was very cuſtomary in ſome diſeaſes to tie or bar the veins. In the founder the legs were tied, that the inflammation might not proceed upwards; which inevitably occaſioned mortification, or loſs of the hoofs. In affections of the head, the cervical ligament was bored through with a hot iron, and the pole evil frequently produced. A cough raiſed a ſuppoſition that the horſe had ſwallowed feathers, or hen's dung; and he was treated as ſkilfully as ſuch an ingenious ſuppoſition would dictate: this among grooms is not yet done away. A ſtumbling horſe had his noſe ſlit. Some diſeaſes were ſuppoſed to be occaſioned by the bite of ſhrew mice; and even to this day, among country people, the fern owl, or eve jar, is ſuppoſed to inflict a diſeaſe on calves as it flies, by ſtriking them, but which it is known is occaſioned by a ſpecies of œſtrum, or gad fly. The hedge-hog lay under the obloquy of ſucking cows, and I remember to have ſeen, when I was a boy, a rabbit ſaid to be poiſoned by rats ſucking her. A perſon aſſured me, he was witneſs to ſtones being tied up in a horſe's ear, ſome years ago in Wales, to make him go faſter: and in the old books of farriery, one reads numerous directions to uſe notched ſticks in a ſlit of the ear, to ſew up powdered glaſs in an opening of the

the ſkin, with other equally cruel and abſurd practices. It is therefore evident that Sir William Hope's tranſlation of Sollyſel muſt have contributed greatly among the intelligent to place theſe errors in a proper point of view. About the middle of the laſt century, the art experienced conſiderable improvement by the labours of Mr. Gibſon, who was originally a ſurgeon to a regiment of cavalry; from which ſituation it is probable he was firſt led to turn his attention to the diſeaſes of the horſe; and by which he was at length enabled to preſent the beſt treatiſe on farriery that had appeared in the Engliſh language: it is ſaid he afterwards lived in Duke Street, Groſvenor Square, where he practiſed with great reputation. He appears to have written ſeveral books; but his principal work is that above alluded to, which was publiſhed in quarto, with anatomical plates, copied from Snape or Ruini; and called *The Farrier's Guide.* But Mr. Gibſon and his cotemporaries, and indeed the whole of his predeceſſors, always began where they ſhould have ended: they gave rules for the treatment of diſeaſes, but they never taught what diſeaſe was, by explaining the ſtructures, functions, and œconomy of the animal body when in health. What uſe therefore Gibſon was to the art, aroſe only from the ameliorated ſyſtem thoſe would purſue into whoſe hands his book fell; but enquiry was not ſtirrred up, and the improvements he pointed out there reſted: it was a ſuperſtructure without a baſe, conſequently nothing more could be built on it: it was an empirical practice, without a poſſibility of ratiocination; which, however proper in the darker ages, when there were no data to ground opinions upon, would now be deſtructive to the beſt intereſts of the ſubject. But though his anatomy was incorrect, and treated in ſuch a manner as to be uſeleſs, yet his treatment of diſeaſes was generally very judicious, and his account of ſymptoms accurate and intereſting: and, as he was guided moſtly by his own obſervation,

observation, fo he became the beft writer and practitioner that this country had produced.

'As a cotemporary with him, lived the celebrated and eccentric Dr. Bracken, who was a phyfician of great abilities, and extenfive knowledge in his profeffion ; a man of confiderable erudition, a fportfman, and a wit of a peculiar caft. His works have, by fome, been as much admired and read, for the peculiar ftyle in which they are written, and that peculiar freedom and non-obfervance of rule or form, as for the real information they contain.

'Though there is great ingenuity in his writings, and though, in many refpects, he improved upon Gibfon, yet as a practical work it was much inferior ; nor was his information given in a way that could benefit the generality of his readers : independent of his ftyle being too peculiar, and his reafoning too abftrufe for farriers, his manner of purfuing his fubject was fo defultory, that few readers had patience to follow him. Neverthelefs his works, which were feveral, and paffed through many editions, have raifed him a fame that can only die with the fcience.

'Bartlet was a fucceffor to the two former, and was likewife a furgeon, who formed himfelf on the model of Gibfon and Bracken, culling all their excellencies, and giving the fum of their treatment in a much more compendious form, and wholly practical. Bartlet likewife enriched his works, and benefited the art, by tranflating La Foffe's improvements and difcoveries. But he was fimply a copyift and compilator, and attempts no addition of his own, but an alteration in the mode of nicking ; which it is furprizing that a man of fenfe, and educated as a furgeon likewife, fhould think of recommending, as it was a cruel and dangerous mode, and confifted in bending the tail back on the body, and faftening it there by means of a machine. La Foffe, in his *Guide du Maréchal*, fufficiently fhews the impropriety of this practice, and fays he has feen the worft confequences

consequences ensue from its use. It is easy to see that Bartlet had not, when he wrote the first editions of his work, seen much practice; and throughout the whole it is evident he had paid no attention to the anatomy of the horse; he even fails in attempting the description of the tail, which should have been his particular study. Besides his *Gentleman's Farriery*, he published a *Veterinary Pharmacopœia:* the former work was translated into French. Bartlet's principal help to the art was the introduction of a much better mode of shoeing, or at least of managing the feet, by his translation of La Fosse.

'To him succeeded Osmer, who was likewise bred a surgeon, but practised the veterinary art in Oxford Street. He appears to have been an eccentric but very ingenious man. His *Treatise on the Lamenesses of Horses*, with an improved mode of shoeing, is most deservedly esteemed. His system of shoeing, perhaps, receives its greatest compliment when it is known that it is that adopted by Mr. Morecroft, with very trifling alterations. He first commented upon La Fosse's method, pointing out the excellence of his mode of treating the feet; but that the short shoe was inadequate to the support and protection of the foot in the present improved and hard state of our roads. The practical part of this treatise on lamenesses is likewise excellent, but his reasoning is sometimes defective.

'From the above works there were soon many compilations made, which were generally below mediocrity: amongst which, one called the *Farrier's Dictionary*, though a very wretched composition, met with a very rapid sale. I must except from these a small treatise by a Mr. Blount, surgeon, which is above the common class, and worthy of notice, from an ingenious contrivance depicted on a plate for securing a fractured limb. Mr. Clarke, of Edinburgh, the king's farrier for Scotland, soon after this gave the world his excellent *Treatise on Shoeing and Diseases of*

of the Feet; and which has been ſince followed by one on the *Prevention of the Diſeaſes of the Horſe*, which work no perſon ſhould be without who ſtudies this ſubject. Nearly at the ſame time, or very ſoon after, the public were indebted to Lord Pembroke, whoſe work, though profeſſedly written on the management of dragoon horſes, contains ſome excellent obſervations on ſhoeing, and the general treatment of the animal. Lord Pembroke derived the principal of his medical hints from Mr. Clarke. Whether it was previous or ſubſequent to the appearance of theſe latter publications that Mr. Stubbs publiſhed his elegant *Plates of the Anatomy of the Horſe*, I have not at this moment the means of aſcertaining; but it was much about this period. Mr. Stubbs was a very eminent horſe painter, and to a high profeſſional excellence in his art added a very conſiderable knowledge of the animal frame, particularly of the horſe: but Mr. S. appears to me to have gone too far as a painter, and not quite far enough as an anatomiſt. Conſidering how little aſſiſtance this gentleman could gain from former authors, one is ſurpriſed at his correctneſs, and, if there appears ſome parts not ſo correct, it cannot be wondered at. The names of the parts are made to follow the human too cloſely, and the references puzzle and bewilder; add to which, the expence prevented its general uſe. I have underſtood this gentleman is now engaged in ſome comparative part of anatomy. From theſe periods, till the eſtabliſhment of the Veterinary College, the attention of the public was occupied by Mr. Taplin. This gentleman likewiſe began his career as a ſurgeon, but turned aſide to the then more profitable track of farriery. Mr. T. ſet out by decrying all that had gone before him, all that were in practice with him, and in fact, every thing that has been done by any one ſince. Yet Mr. Taplin's works are ſaid to be compilations from thoſe very authors whom he abuſes, and in ſome inſtances, after abuſing egregiouſly, he copies literally.

Unfortunately

Unfortunately for this gentleman, from ſome late improvements, the people of this country have learned to diſtinguiſh, in this art, as well as in others, between ſcientific inveſtigation and verboſe quackery. Had Mr. Taplin ſet out by ſtudying the ſtructure and œconomy of the animal, he might, and undoubtedly would, have proved an ornament to the profeſſion; but when he permits his works to go through ſo many editions, in the face of criticiſms from all quarters, with a chapter on diſeaſes of a part that has no exiſtence in the horſe, i. e. *the gall bladder*, we muſt be aware that he is entirely ignorant of that, upon which every pretenſion to profeſſional merit muſt be grounded. Mr. Taplin indulges himſelf in the moſt unreſtrained freedoms in ſpeaking of thoſe who have gone before him, yet copies verbatim from them; he cannot wonder, therefore, that he has been treated with conſiderable ſeverity by later writers; nor can he be ſurpriſed that a practice ſo begun and ſo continued has ended as his has.'

After giving an account of the riſe and eſtabliſhment of the Veterinary College, with which our readers are already acquainted, the author proceeds to notice the different publications that have appeared on the ſubject, from the time of this inſtitution to the preſent. 'In 1790, Mr. Proſſer, a gentleman engaged in the practice of phyſic, advertiſed his intention of practiſing farriery; and, as a previous ſtep to it, publiſhed a *Treatiſe on the Strangles and Fevers of Horſes.* It contains ſome judicious remarks on other authors, but offers little original matter. Mr. Taplin likewiſe produced, at various times, other publications, which were exact counterparts of his *Gentleman's Stable Directory*. One of theſe, remarkable for its neatneſs of appearance, called *multum in parvo*, appears to have been ſimply intended as an advertiſement of Mr. T.'s infallible *Prepared Horſe Medicines*; one ſpecimen is ſufficient: he recommends *balls for the inflammatory*

cholic,

cholic, "which need no collateral aid, but brisk action and friction."

'If Mr. T. can only procure one authenticated case of his balls removing inflammation of the bowels, with the assistance of brisk action without collateral aid, I must add, that all the eminent men from the time of Hippocrates to the present moment, have observed and studied to no purpose; they have been the promoters of error, and the propagators of falsehood; if he cannot, the inference is plain. The subject would be below my notice, but that innumerable are the mischiefs such professions occasion. In 1796, appeared a very elegant work in quarto, the production of S. Freeman, Esq, an amateur in the manege, and a gentleman of fortune, learning, and great ingenuity. This publication consisted in a *Description of the Structure and Œconomy of the Foot;* accompanied with a set of plates highly finished, in Skelton's best style. The subjects were dissected under the inspection of Mr. Home, or an assistant, and, except some slight errors in the ligaments of the navicular bone, appear very correct. This publication, for the elegance of its engravings, and the general spirit of the whole, will be long without a competitor. It recommends a very ingenious mode of shoeing; and the œconomy of the foot is likewise highly ingenious, though it will be seen in the course of this work that we have ventured to differ from Mr. Freeman in some points.

'A Mr. John Lawrence about this time published a small volume, containing extracts from Monsieur St. Bel, Osmer, Clarke, and Lord Pembroke. In 1798, this gentleman brought forward a *Philosophical and Practical Treatise on Horses*, and on the moral duties of man towards the brute creation, in two volumes. The part of this work on the general treatment of the horse is humane and interesting. In the part that attempts to describe the treatment under disease, as Mr. Lawrence

Lawrence owns his ignorance of the ſubject, and faithfully notices his authorities, he becomes no farther anſwerable for the errors, than as theſe errors by his means become more widely diſſeminated.

'In 1800, Mr. Morecroft publiſhed a ſmall pamphlet with a "*Curſory Account of the various Methods of* "*ſhoeing Horſes, with incidental Obſervations.*" Any remarks on this production would be unneceſſary; the ingenuity of the author is well known. The mode of ſhoeing recommended will be noticed in the courſe of the work. This year likewiſe produced a vindication of the preſent practice of farriers in a pamphlet by Mr. Lane. I ſhall only remark at preſent, that if this gentleman was delegated by the body general, they could not have been more unlucky in their champion. It was one thing to reprobate the abuſe caſt on them, but it was another to ſupport and vindicate their abſurdities. I ſhall have occaſion to notice this publication more fully by and by.

'In the beginning of the preſent year, Mr. White, veterinary ſurgeon to the 1ſt regiment of dragoons, gave to the public a very uſeful *ſmall Vade Mecum of Farriery*, which appears to be principally compoſed from Mr. Coleman's lectures.

'This year likewiſe produced a work of conſiderable elegance from the pen and pencil of Mr. Richard Lawrence, of Birmingham, veterinary ſurgeon. It is much to be regretted that a gentleman who appears to poſſeſs ſo much ingenuity, ſhould paſs over ſubjects of ſuch importance in ſuch a light curſory manner. The deſcription and treatment of ſome diſeaſes occupy fewer lines than (to treat the ſubject in ſuch manner as to prove uſeful) they would require pages. The plates are elegant, and extremely well deſigned, particularly thoſe that regard the proportions and paces of the horſe; thoſe that regard the internal ſtructure and diſeaſes are not ſo happy. The diction is very ſuperior, and as a cabinet work it is moſt certainly elegant and intereſting;

ing; but as a useful aſſiſtant to the art itſelf, it does not rank ſo high.

'Theſe, I believe, form nearly the whole of the publications, entitled to notice, that have appeared in our language: there have been ſeveral others of leſs note, ſome of which have fallen under my inſpection, but do not deſerve attention: others I have not ſeen; but thoſe I have deſcribed are the only works of any degree of celebrity. I had forgot to mention a quarto work publiſhed about the year 1797 by Mr. William Griffiths, "forty years groom to Sir William Wynne, "Lord Egremont, and other noble perſonages." On looking into it, I found here likewiſe a chapter dedicated to diſeaſes of the gall bladder: of the *pretenſions* and *merits* of this work I need ſay no more. There appeared about the ſame time likewiſe a quarto publication by Snape, which was in ſome degree ſuperior to the former.'

MISCEL-

MISCELLANEOUS.

§ 95. *History of the Human Race.*

M. LACEPEDE, at the opening of his last course of Lectures on *Zoology*, delivered a discourse on the hist[illegible]ry of the different races and chief varieties of the human species, remarkable at once for novelty of system and elegance of style. Naturalists, he observed, have always marked the differences in conformation which characterize mankind in different climates; but, in order to distinguish them, have attended especially to the colour of the skin and the texture and dimensions of the hair. According to the ideas of M. *Lacepede*, these differences are merely va[illegible]ties, and by no means constitute distinct races. He thinks [illegible] characteristic traits of real distinction of race consist in the [illegible]sion of organs more important than a simple tegument; and are [illegible] be found principally in the dimensions of the bony compages of the body.

Upon this principle, this celebrated naturalist reckons four distinct races of the human species, and which he names the *European-Arab*, the *Mongolian*, the *African*, and the *Hyperborean*.

The first, with oval visage, long nose, and projecting skull, occupies a great part of the old world, that is to say, the regions of the Arabian Sea, of Northern Africa, of the Persian Gulf, of the Caspian, the Euxine and Mediterranean Seas, the great European Peninsula, the whole of the western and a very large share of the northern part of Europe.

The *Mongolian* race is characterized by a flat forehead, cranium slightly prominent, small nose, eyes placed obliquely, high cheeks, and large lips. This race is scattered over a large portion of the north of Asia, in the regions of China, in the Asiatic Archipelago, and in India, and on the vast plains of Tartary.

The *African* race, distinguishable by the flat forehead, cranium still less projecting than that of the Mongolian, the nose broad and flat, prominent cheeks, advanced jaws, lips everted, and thick, inhabits the regions of eastern and western Africa.

Lastly, the *Hyperborean* race, found on the north of the two continents, and comprehending the Laplander, Samoyede, Ostiack, Tchutchis,

 Greenlander,

Greenlander, and Eſquimaux; this may be diſtinguiſhed from the other races by the flatneſs of the viſage, ſquat figure, and extremely ſmall ſtature.—Such are the grand diviſions of the human ſpecies which the author endeavours to eſtabliſh.

M. *L.* takes care to remark, that thoſe races, by frequent intermixture, have given birth to numberleſs varieties, in which the diſtinctive characters of the principal ſtocks are ſometimes ſufficiently retained to be known, or at leaſt conjectured, but at others are ſo confounded, altered, or effaced, as to leave no index of the ſtem from which they were originally produced. Theſe, however, he conſiders as exceptions not affecting the general laws of Nature.

Independent of theſe differences ariſing from the diverſity of proportions, each of the four great races of the human ſpecies is, by the influence of climate, ſubjected to changes that are ſuperficial, but, at the ſame time, ſtriking and durable; whence reſult varieties of another kind. Theſe varieties, the cauſes of which *Buffon* has ſo well aſſigned, conſiſt in the dimenſions and quality of the hair, and in the ſhades of colour of the ſkin.

If the laws of Nature appear to be interrupted in certain countries, the principal cauſe of this may be attributed, the author thinks, to human induſtry and the arts of civilization. ‘ Amongſt all living and ſenſible beings,’ M. *Lacepede* obſerves, “ the art of the ſpecies is its nature.” Induſtry, which proceeds only from Nature, and ſprings from no foreign ſource, is the completion of her natural attributes. We ſhould have but an imperfect idea of her eſſence, were we ignorant of the extent of the developement of her faculties. The uſe which each race of the human ſpecies has made of the qualities which Nature has beſtowed on it, ought then to be the object of the labours of the hiſtorian; and of this he ſhould endeavour to give a faithful image.

‘ In order to overthrow thoſe abſurd ſyſtems,’ M. *Lacepede* obſerves, ‘ which maintain that the ſavage ſtate is the natural ſtate of man; to deſtroy the paradoxes of the materialiſts, who would aſſimilate man with the brute creation; I would only oppoſe to them this ſimple truth—“ the art of the ſpecies is its nature;” its induſtry is the complement of its natural attributes. This art, the fruit of intelligence, elevates itſelf to the higheſt combinations of wiſdom and genius. To it we owe the ſocial ſtate: a government founded on public liberty is its *chef d’œuvre.* The ſtudy of the natural ſciences thus becomes a branch of the ſtudies of the politician. It enables us, with *Monteſquieu,* to explain, why deſpotiſm is naturalized, as it were, in certain climates, whilſt liberty appears the indigenous production of other countries.’

In deſcending from generalities to particulars, M. *Lacepede* examines firſt the Mongolian race; tracing it from China, along the borders of the Ganges, and the peninſula of India, the fertile fields of which they have for ſo long a period cultivated. He conſiders it diſtinct from any foreign

foreign admixture, an accident to which it has more than once been ſubjected by war and conqueſt. Amongſt this race agriculture is honoured, and manufacturing induſtry carried to the higheſt pitch of perfection; here commerce is eſtabliſhed, and monuments of architecture and ſculpture are found, derived from the remoteſt antiquity; they poſſeſs the arts of writing and printing, and likewiſe the dramatic art; the cultivation of the ſciences which owe their birth to the obſervation of external objects, as well as thoſe which reſult from the operations of the underſtanding, and which we at preſent deſignate by the term *Ideology*, here alſo is purſued; mathematics are cultivated with ſucceſs: and, laſtly, they are in poſſeſſion of a civil code, which, for extent, arrangement, foreſight, and preciſion, might be compared with the celebrated code of *Juſtinian*. This, however, is the extent of their political acquirements. The noble ſentiment of liberty has never animated them.

On conſidering this race, whoſe intelligence appears to be arreſted, as it were, in the midſt of its progreſs, one would be tempted to believe, the author obſerves, that Nature had refuſed them the plenitude of her gifts; but he conſiders this privation rather as the effect of the ſuperſtitious notions under which it has conſented to ſubjugate its reaſon, from times the moſt remote. This leads him naturally to a rapid examination of the religious ſyſtem of the Mongolians. Fear and gratitude at firſt created their gods; but the hypocritical ambition of individuals has depraved this ſimple and primitive religion, in order to make it an inſtrument of deſpotiſm and oppreſſion.

Neverthelеſs, under the empire of this religion, and thanks perhaps to the dogma of the *Metempſycoſis*, the Mongolian race has preſerved its mild virtues, its affectionate ſentiments, and its morals, and has even known and practiſed the maxims of true ſtoiciſm.

He repreſents them as overcome by other Mongolians more hardy than themſelves, or more inured to the hardſhips of war; or as conquered by a foreign race, and triumphing over their conquerors by the preſervation of their manners, knowledge, laws, and cuſtoms. This advantage ariſes from a ſtrong and conſtant attachment to their inſtitutions; inſtitutions, which owe their ſtability to their having been dictated by the moſt enlightened of the race.

Such is the brilliant picture which the author preſents us of the intellectual and moral faculties of the Mongolian race of mankind. The *African* furniſhes him with but a few general traits, ſerving only to characterize its ignorance, its barbariſm, and its wretchedneſs. This miſerable race appears ſtill to be deſtitute of the faculty of conceiving with vigour, of reflecting with perſeverance, of comparing with diſcernment, or of reaſoning with depth.

The *Hyperborean* race he repreſents as ſtill leſs intelligent, but as poſſeſſing virtue, peace, and perhaps happineſs.

To theſe diſmal images ſucceeds the brilliant picture of the *European-arab* race. Its arts, its ſcience, its genius, its civilization, its laws, its diſcoveries,

diſcoveries, its conqueſts, and its power, which was never yet ſubdued by a foreign race, form the principal traits of this magnificent picture, and which is calculated to ſwell with noble pride the inhabitants of this part of the world. But of the four races ſcattered over the ancient continent, that whoſe civilization appears to reach the moſt diſtant æra, is the Mongolian.

The author next examines the origin of thoſe four races. This queſtion gives riſeto others reſpecting the cauſes of the differences which are remarked in their bony frame, and which ſerve to diſtinguiſh them from each other, independently of their different ſhades of colour. Theſe differences the author attributes to the influence of climate, which, in the firſt ages of the world, exerted a far greater power than at preſent, and which ſtill continues to produce the varieties of the ſecond order.

Before loſing ſight of theſe grand objects, the author caſts his eyes on the new continent, and inquires, to what race we ſhould refer the inhabitants that were ſcattered in the midſt of its woods and mountains when *Chriſtopher Columbus* firſt arrived there, three centuries ago. Adopting in this point the ſage conjectures of M. *Fleurieu*, reſpecting the origin of the preſent inhabitants of the weſtern coaſt of *North America*, he is led to believe, that the Hyperborean race ſpread from Europe, and Aſia, to North America, and that the other portions of the ſame part of America were diſcovered and peopled by individuals of the Mongolian race, who might eaſily have traverſed the peninſula of *Kamtſchatka*, *Behring's* bay, the Aleutine Iſlands, and the peninſula of *Alaſka*.

As to *South America*, he makes other conjectures. It is poſſible, he remarks, that the Mongolians, on arriving at Mexico, croſſed the iſthmus of Panama. One might believe alſo, that the *Malays*, thoſe famous navigators of Aſia, had given to *Peru* the inhabitants which *Pizarro* found there. But the ſuppoſition which to him appears moſt probable, is, the exiſtence of a particular race, long prior to the arrival of the Mongolians and Malays; a true race of Aboriginal Americans very diſtinct from the other races in its chief proportions; but which it is no longer poſſible to recognize; ſince the European-arab race has conquered, ravaged, depopulated, and repeopled, almoſt the whole ſurface of the new world.

As the reſult of his reſearches, M. *Lacepede* endeavours to eſtabliſh the following important truths. The change from the ſemi-barbarous ſtate to that of civilization, takes place by a vaſt number of inſenſible ſhades, and requires an immenſe time for its completion. In paſſing ſlowly through thoſe ſucceſſive changes, man contends painfully with his habits; he combats, as it were, againſt nature; he mounts with effort the ſteep aſcent. But in relapſing into barbariſm it is far otherwiſe; the change here is almoſt ſudden. In this lamentable fall, man is precipitated by all his old propenſities. He no longer combats, but yields; he no longer overcomes obſtacles, but abandons himſelf to the force which draws him. Ages are neceſſary to the growth and perfection of the tree of ſcience; a ſingle blow of the axe of deſtruction ſevers its ſtem, and overthrows it.

§ 96.

§ 96. *Lusus Naturæ in the Arterial System.*

A very singular instance of unusual conformation in the arterial system of the lungs is related in the *Journal de Physique*, an. x., by A. *Maugars*, of *Angers*, student in medicine. It occurred accidentally at the Anatomical Theatre of Cit. *Jadelot*, of Paris, on the dissection of the body of a child seven years of age, externally well formed, and apparently of a lymphatic temperament. The author remarked a considerable artery in the abdomen, which at first appeared to be one of the inferior diaphragmatics (une sous-diaphragmatique), much larger than usual: but he soon discovered that this artery, which arose from the superior, anterior, and right side of the aorta abdominalis, was not destined to the diaphragm, but that, penetrating within the chest, it divided itself into two large branches, which were distributed to the lungs. In ordinary cases, we well know, there is not the smallest arterial ramification whose distribution resembles this.

The artery in question, and the diameter of which was about five millimetres, sprung, as has been said, from the anterior and right side of the aorta, the diameter of which at this part did not exceed a centimetre. Its origin touched the coeliac trunk, which was of a much smaller size than it: ascending then between the aorta and oesophagus, it gave off, about four millimetres from its origin, the right sub-diaphragmatic artery, the distribution of which was in the usual manner; the arterial trunk then, entering the chest through the opening of the diaphragm that gives passage to the oesophagus, divided itself behind this channel, and immediately above the diaphragm into two branches, of at least 3 millimetres diameter. These branches passed obliquely, in bending their course towards the lungs, and formed with each other nearly a right angle.

The right branch, which was longer and slenderer than the left, entered the posterior, inferior, and internal part of the right lung, and distributed itself throughout its inferior lobe, by means of two principal ramifications. The left branch was distributed in like manner to the inferior lobe of the left lung.

The trunk of the artery and its chief branches gave out no other branch than the sub-diaphragmatic already mentioned, and were not accompanied by any corresponding vein, nor any particular nerve.

With respect to the pulmonary artery itself, nothing particular was remarkable at first view in its distribution; its trunk, and the right branch, were, in fact, of the ordinary dimensions; but, on tracing more minutely the left pulmonary branch, it was found that, though in general less than the other, this was in the present case much smaller than usual, its diameter not equalling by one half that of the right. This deficiency, it is evident, was made up by the accessory branch from below.

On injecting the pulmonary arteries, it was found that they inosculated freely with the branch derived from the abdominal trunk. The pulmonary

monary veins were distributed in the usual manner. The left sub-diaphragmatic artery arose from the coeliac. The lungs themselves were sound, but rather larger in bulk than usual, as was the heart also. All the digestive organs, the liver, spleen, and pancreas, were small in volume; the stomach, and the whole of the intestinal tube, were of a horny texture; but the kidneys, of which the right had a double ureter, were large, and divided into several distinct lobes.

From the description that has been now given it appears, first, that in this individual the inferior pulmonary artery arising from the abdominal aorta established a particular small circulation purely arterial, extending from the aortic (left) ventricle to the pulmonary (right) ventricle through the aorta, the inferior pulmonary artery, and a part of the pulmonary veins. Secondly, that, by means of the communications existing between the minute branches of the superior and inferior pulmonary arteries, a mixture took place of the arterial blood of the latter with the venous blood of the former; a circumstance analogous to what occurs in the varicose aneurism.

An interesting question, the author observes, here presents itself. Did the considerable portion of the arterial blood, which, by an exception to the ordinary laws of the human organization, returned in this case to the lungs in the same condition in which it had left them, and without having passed to the state of venous blood—did it acquire any peculiar qualities by its repeated exposure to the atmospheric influence? did it become redder, hotter, more concrescible, or more powerfully stimulant, than the common arterial blood? In a word; could this disposition occasion any marked modification in the constitution of the individual in which it took place? No direct answer can be given to these questions, the previous history of the subject not being known. Yet an inference may be drawn from the following experiment.

A portion of arterial blood, taken from the carotid artery of a dog, was exposed to the influence of oxygene gas for four-and-twenty hours; but it was not found to have become redder, or more firmly coagulated, than blood exposed simply to the atmosphere. This observation seems to confirm the idea, that the arterial blood is completely saturated with oxygene; that this principle cannot combine itself with it in any greater proportion, nor, consequently, excite in a higher degree the phenomena due to this combination, the immediate effect of respiration.

It seems probable, therefore, that the singular construction here described led to no peculiar physiological consequence, and that the considerable artery furnished to the lungs by the abdominal aorta was in reality a useless trunk, a superfluous production, having no marked effect on the constitution of the individual.

---

§ 97. *Prize Question proposed by the College of Pharmacy of Paris.*

Practitioners in pharmacy are in the daily habit of mixing together different salts, especially the sulphates of potash, soda, and magnesia, the muriate

muriate of ammoniac, the tartrites of potash and soda, the super-oxygenated muriate of mercury, or corrosive sublimate, the tartrites of antimony and potash, &c. with soups, apozems, ptisans, whey, distilled waters, and spirits, without clearly knowing whether those saline substances are altered or decomposed, and what consequences result from such alterations and decompositions, if they do take place. The College of Pharmacy of Paris deservedly calls the attention of practitioners to those reciprocal actions which are constantly taking place in the greater number of extemporaneous preparations; and have proposed in consequence a gold medal, of the value of six hundred francs (25l sterling) for the best dissertation on this subject: as the prize is open to persons of all countries, we have thought it right to state the question, for the benefit of our readers, believing it to be one of much practical importance. It is couched in the following terms.

"To determine by exact experiments what changes take place in the salts most frequently employed, especially the sulphates of soda and magnesia, the tartrites of potash and soda, the super-oxygenated muriate of mercury, and the tartrite of potash and antimony, when mixed with the usual drinks, such as ptisans, apozems, decoctions, broths, whey, juices of plants, and pharmaceutic mixtures."

The memoirs on the subject must be written in the French or Latin language, and be transmitted, free of postage, to Citizen *Bouillon La Grange*, by the first of Vendemaire, year 11. The usual regulations respecting the concealment of the author's name, &c. must be attended to.

---

§ 98. *On Vitality, and the Life of Germs. By* Dr. Michelotti, of Turin. Part 2.

The former paper of the author on this interesting subject, shewing the influence exerted by light on vegetation, we had lately occasion to notice at considerable length.* From the experiments there detailed it appeared, that the expansion of the germs or first rudiments, both of animals and plants, requires obscurity, light being evidently prejudical to the process. In the second part of his inquiry, published in the *Journal de Physique* (Pluviose, an. x.), M. *Michelotti* continues his investigation of the subject.

The author's chief object on the present occasion, was to determine the influence of the different gases on the life of the embrions of impregnated ova. He employed for this purpose the eggs of the *phalæna aispar*, *phalæna mori*, and of a particular species of spider, *araignée diadema*, and the experiment was made at a temperature sufficient for their hatching. When the eggs were exposed to the atmospheric air in glass tubes inverted over mercury, it was always found that a diminution of the volume of

* See page 73 of the present volume.

of air had taken place. On examination of the reſidue, it was obſerved that the oxygenous portion had diſappeared, whilſt carbonic acid gas was formed. In this reſpect, therefore, eggs reſemble animals, which, at the ſame time that they abſorb oxygene, give out carbonic acid.

When the eggs were confined in atmoſpheric air, and expoſed to the ſevere cold of winter, the thermometer ſtanding from 6° to 10° below 0 (13° to 22° of *Fahrenheit's* ſcale) for the ſpace of a month, not the leaſt degree of abſorption appeared to have taken place; but when the ſame eggs were afterwards expoſed to the open air in a moderate degree of heat, they were all perfectly hatched. This demonſtrates evidently that eggs under expoſure to a conſiderable degree of cold are in a ſtate of torpor, and that their vitality is not ſupported by the caloric given out during the abſorption of oxygene gas, ſince no abſorption of this had taken place. Nor when the bulb of a very ſenſible thermometer was plunged in the midſt of a large maſs of the eggs in the torpid ſtate, did the inſtrument indicate the leaſt degree of heat or cold different to that of the ſurrounding atmoſphere.

The author next endeavoured to aſcertain whether the abſorption of oxygene was an indiſpenſible requiſite to the developement of the vital principle. He always found that the very firſt ſteps towards hatching were accompanied with this abſorption. When the eggs were kept in a determined portion of atmoſpheric air, ſo as to have abſorbed all the pure part of it, and had become torpid in conſequence, they were nevertheleſs completely hatched on expoſure to the open air at a proper temperature; that is, although they had ſuffered a ſuſpenſion of their function of reſpiration, their vitality was not extinguiſhed. When, however, they were kept in this ſtate of ſuſpenſion, having abſorbed the vital portion of the air in which they were encloſed, for the ſpace of a month, they no longer exhibited any ſigns of vitality. The ſuſpenſion of the function of reſpiration (if it may be ſo termed) in eggs is therefore extremely limited, and continues only for a few days. The neceſſity of the preſence of oxygene gas in a certain quantity is likewiſe evident; ſince the ova were not hatched in air, the reſidue of their reſpiration, and which conſiſts chiefly of azotic gas.

From what has been ſaid, therefore, it is apparent, that the function of reſpiration in the eggs of thoſe minute animals is eſſentially connected both with their vitality, and their developement; and in order to effect the latter, the preſence of oxygene in a certain doſe is neceſſary, as in breathing animals.

Inſtead of atmoſpheric air, the ova were expoſed in turn to the influence of hydrogene, azotic, and carbonic acid gaſes. In the two former, no ſenſible abſorption took place, nor any developement of the ova. But in the carbonic acid gas a trifling abſorption was manifeſt, though not more than might be fairly attributed to the ſmall quantity of atmoſpheric air remaining intermixed with the ova, and which it is ſcarcely poſſible entirely to expel without endangering their deſtruction. It took place, likewiſe, only during the firſt two days of the experiment.

Seeing,

Seeing, then, that thoſe gaſes were not abſorbed, and therefore were not fitted for the reſpiration of the ova, it remained to be learnt, whether any poſitive inquiry had been ſuſtained by their application. In order to aſcertain this, the ova were expoſed to the atmoſphere under circumſtances favourable to their developement. Thoſe which had been expoſed to the carbonic acid gas for the ſpace of four days at a low temperature, viz. from 6° to 10° (45° to 54° of *Fahrenheit's* ſcale) began to be hatched in four days. Others which had been kept in carbonic acid gas at a higher temperature, and ſome that had been expoſed to hydrogene gas at a low temperature, ſhewed ſigns of developement after ſeven days expoſure to the atmoſphere. Laſtly, the ova that had been kept in hydrogene gas in a moderate degree of warmth, took eighteen days before they manifeſted ſigns of hatching. With reſpect to the number hatched in each of theſe caſes, it was obſerved, that almoſt all thoſe that had been kept in the carbonic acid gas at a low temperature, were hatched; of the reſt, the greater number of thoſe out of the hydrogene gas at a low temperature; many of thoſe of the carbonic acid accompanied with warmth; and but few of thoſe expoſed to the hydrogene, at a moderate degree of heat, were hatched.

It appears, therefore, that ova, by expoſure to the gaſes above-mentioned, ſuffer a ſuſpenſion of their reſpiration, and conſequently of their developement; but ſince thoſe that were expoſed to them at an elevated temperature appeared to be moſt injured, it ſeems at leaſt probable, that they ſuffered ſomething likewiſe from the poſitive action of thoſe gaſes, being rendered by the heat more ſenſible and ſuſceptible of their impreſſion.

From other experiments of the author, it appears probable that the quantity of carbonic acid gas furniſhed by ova, during their developement, is not adequate to that of the oxygene gas abſorbed; and therefore that a portion of the latter becomes fixed in the ſubſtance of the germ, and in this way contributes directly to the principal phenomenon of its developement, the conſolidation of its parts.

A quantity of ova was placed in two tubes filled with atmoſpheric air, and the tubes inverted, the one over lime-water, the other over mercury. They had both abſorbed the ordinary quantity of air in the ſpace of thirteen days; but the ova being on the point of hatching at the time of their immerſion, it was found that two of them were actually hatched during the latter days of the experiment in the tube inverted over lime-water, but none in the other.

An equal quantity of ova was put into two phials, the one of them filled with oxygene gas, and corked, the other expoſed to the atmoſphere. Th ſe contained in the oxygen began to be hatched in four-and-twenty-hours, and the following day fifteen of them were obſerved to have come forth. Within the ſame period, ſix of thoſe contained in the other phial were obſerved to be hatched. In the ſpace of four days the whole of the former were hatched, whilſt of the latter, ſeven days had

had elapſed before the greater number had come forth from the egg. The young animals in the oxygene gas were more lively than the others, at their exit from the egg ; but they did not become coloured as in the phial expoſed to the open air.

A quantity of ova was likewiſe put into two tubes, filled with oxygene gas, and the tubes inverted, the one over lime-water, and the other over mercury. In about twenty hours, many of the former were hatched, but very few of the latter. After two days, when the proceſs of developement had ceaſed, it was found that a quarter of thoſe contained in the tube inverted over lime-water were hatched, whilſt five only of the other had come forth from the egg. Of the oxygene gas contained in the tube inverted over the mercury, eight parts in ſeventy-one only were abſorbed ; whilſt of that over the lime-water, of eighty-ſeven parts of oxygene, no leſs than eighty-one were abſorbed, ſix parts only remaining unabſorbed by the eggs. In this caſe, ſlight traces of a precipitate were obſerved in the lime-water during the firſt few hours ; and afterwards the ſides of the tube near the bottom were found covered with an infinite number of minute points, which, when examined with a magnifying glaſs, proved to be beautiful cryſtals of carbonate of lime, in the ſhape of perfectly diſtinct rhombs.

---

§ 99. *On ſome Effects of the Galvanic Pile on the Organs of Senſe.*

M. *Ritter*, who has paid much attention to the ſubject of galvaniſm, has examined the effects of the galvanic electricity on the different ſenſes. He remarked the difference of colour, blue and red, produced in the eye by the application of the wire from the zinc or the ſilver extremity of the pile. He believes, likewiſe, that objects appear of different magnitudes, according to the different wire employed.

In order to examine the difference of the ſenſations which the organ of taſte experiences, he applied the wire from the zinc ſide on the tongue, and the other on the teeth : a very ſenſible difference was obſerved on changing the wires. The ſenſation felt by the finger, on applying the wire of one extremity of the pile, appeared to him to reſemble *burning*, whilſt the other excited a ſenſation like *cutting*. He fancied, likewiſe, that the zinc excited the ſenſation of cold, and the ſilver that of heat.

To examine the effect on the ſenſe of ſmelling, he applied to the noſe the ſilver wire, or that from the ſilver extremity of the pile ; on taking the zinc wire in his hand, he immediately felt an inclination to ſneeze, but which went off on changing the wire. On applying the ſilver wire to the ear, he ſeemed to perceive a noiſe, which was not obſervable when that on the zinc ſide was employed.

M. *Ritter* expoſed himſelf for an hour together to the action of a pile of a hundred pairs of copper and zinc. He felt, he ſays, more pain on touching

touching the copper ſide than on touching the zinc. The arm which touched the copper felt cold for ſome time after, whilſt the other arm felt hot. The arm on the copper ſide loſt the power of moving, whilſt that on the zinc ſide appeared to be more mobile than before. After an hour he was attacked with diarrhœa, and felt extremely weak; he even felt the effects of this galvanization for ten days afterwards, during which he was incapable of cloſe application; and when he approached his apparatus, or any electrical machine, he experienced extreme diſguſt. M. Darnim and other philoſophers experienced ſimilar effects from expoſing themſelves to the ſame trial.

---

§ 100. *Eaſy Proceſs for obtaining the Phoſphoric Acid. By* M. Brugnatelli.

To two drachms of alcohol, contained in a glaſs veſſel, put half a drachm of ſolid phoſphorus, and add afterwards half an ounce of concentrated nitrous acid. The acid by its ſpecific gravity ſinks to the bottom, and covers the phoſphorus, whilſt the alcohol ſwims at the top. In a few moments the mixture manifeſts ſymptoms of ebullition. The phoſphorus oxygenates itſelf at the expence of the acid, and caloric is diſengaged. The alcohol, which was employed in order to begin the decompoſition of the nitrous acid, is ſoon converted into æther, and diſſipated in the air. The ebullition continues till the whole of the phoſphorus is oxygenated.

When the mixture has cooled, there is found in the veſſel the phoſphoric acid in a liquid form, mixt with nitric acid, which laſt may be entirely diſengaged by evaporation in a ſand bath. What remains after this operation is the phoſphoric acid, exceedingly pure and concentrated, and which, on ſlowly cooling, often appears in the form of tranſparent ſolid laminæ.

---

§ 101.

The following *Table* has been ſent for inſertion in the *Medical* and *Chirurgical Review*. The mode in which it is drawn up ſeems a convenient one, though ſome of the articles require comment.

BILL

Complaint.	*Age.*	Jan	Feb	Mh	Ap.	My	Ju.	Jul.	Au.	Sep.	Oct	No.	Dec	Total
Aphtha	3 weeks.								1					1
Apoplexy	39 years												1	1
Atrophy	3 weeks, 50 3 years, 4 months 55 years	1					2			1			1	5
Cancer	65 76 years								1		1			2
Cholera Infantum	6 to 18 months							1	1	2	3			7
Conſumption	54.50.56.75.44.35.27.83.65.69 56.50.60.44.32.55.26.40.48.32	4	1		1	3		1	3	1	2	2	2	20
Debauchery	25 29 years				1				1					2
Dropſy	28 41 years						1	1						2
Dropſy in the brain	12 months			1										1
Epilepſy	4 weeks, 10 years, 8 weeks	1		1					1					3
Fever, bilious	26. 30—45—18. 28—18. 14 64—8. 33			2		1	2			2	1		2	10
Fever, pulmonic	12 days, 15, 21, 84 years		1		1						1		1	4
Hooping cough	3 months to 4 years										4	7		11
Iliac paſſion	95 years											1		1
Mortification	60 years	1												1
Nephritis	74 to 66 years										1	1		2
Old age	82.99.75.76.80	2					1	1		1				5
Palſy	54. 42—68. 64—77. 46. 64—64. 43—60. 19. 80			2	2		3			2			3	12
Phrenitis	31 years		1											1
Scrophula	8 years				1									1
Still born		1												1
Caſualties. Burnt	71 years												1	1
Caſualties. Drowned	60. 18. 45 years						1					1	1	3
Caſualties. Fall	17 years										1			1
Caſualties. Frozen	38 years	1												1
Caſualties. Paregoric	6 months										1			1
	Total	11	3	6	6	4	10	4	8	9	15	12	12	100

Portſmo

Portſmouth, ſituated 43° 5′ north, 70° 41′ weſt from London, contains 5511 inhabitants. The town has been very healthful, not one in fifty-five having died. A bilious remitting fever prevailed the whole year, which in ſeveral inſtances, in September and October, manifeſted the malignant type. From June to October, the cholera infantum was prevalent. From September to the end of the year, the hooping cough was endemic; very few children eſcaped it. A fifth part have died of phthiſis pulmonalis!!! "Is THERE NO BALM IN GILEAD? Is THERE NO PHYSICIAN THERE?"

Nothing in the above liſt is more ſtriking, than the great fatality of conſumption, amounting to one-fifth of the whole number of deaths, and that in a ſituation otherwiſe favourable to health! Phthiſis has been ſuppoſed to be peculiarly fatal in this country; yet it is difficult to conceive it to be more ſo than, from the above account, it appears to be in the new world. It is remarkable, however, that thoſe periods of life which, with us, are the moſt common victims of conſumption, appear to have eſcaped in the above liſt, few of them being below five-and-thirty.

The term *Atrophy*, we obſerve, generally forms one of the heads in *Tables* of *Diſeaſe and Mortality*, but certainly improperly ſo. There is no reaſon to ſuppoſe it to be ever an idiopathic affection, but merely ſymptomatic of ſome organic diſeaſe; which, indeed, is often overlooked. It is hard to conjecture, likewiſe, what is to be underſtood by the term *Debauchery*, unleſs it means *Lues Venerea.*

It appears rather extraordinary that *old age* ſhould be aſſigned as the cauſe of death in the caſes above referred to. With us, the vital functions are frequently performed with great vigour at much later periods than thoſe here aſſigned.

GENERAL

GENERAL VIEW

of

THE PROGRESS OF MEDICINE.

THE phyſical ſciences are boundleſs in their extent. Each ſtep that is gained ſerves but to extend the limits of our horizon, whilſt freſh objects of curioſity are perpetually preſenting themſelves on all ſides, and inciting to the ardour of purſuit. The age we live in is peculiarly favourable to the inveſtigation of truth. The influence of ſyſtem is in a great meaſure loſt; the veneration for names and authorities is done away. Mankind have become ſenſible of the mediocrity of their attainments, and have conſented to purſue the only true, though laborious, path to improvement, obſervation and cautious experiment. Neglecting the fruitleſs enquiry into firſt cauſes, they have confined their reſearches to ſenſible objects chiefly, as thoſe on which alone ſatisfactory evidence can be obtained.

Whilſt the various branches of natural and experimental philoſophy have been moving forward, with rapid ſtrides, the road to improvement, *Medicine*, we would willingly hope, has not been ſtanding ſtill. As

a fcience, however, the flownefs of its progrefs, and the uncertainty of its principles, will ftill be the theme of its adverfaries, as they have been from the days of Celfus. This defect, under which medicine, in comparifon with the other fciences, labours, may be attributed to various caufes, and in great meafure to the inherent difficulties of the fubject itfelf. The operations of the living principle are far beyond the reach of human obfervation; and experiment itfelf here is fo fallacious as hardly to be trufted. We fee the great changes only that are taking place in animated nature; the primary and moft important are veiled in impenetrable darknefs.

No fmall fhare, too, of the imperfection of medical fcience, at the prefent day, may be afcribed to the injudicious mode in which the fubject has been inveftigated. The laws of inanimate matter have been applied to the explanation of the phenomena of living fyftems. Difcoveries in the other branches of natural philofophy may be almoft faid to be the bane of medical fcience. No fooner have the inveftigations of philofophers led to the detection of any of the hidden laws of Nature, than phyficians haften to apply them to the fcience of animal life. Hence we have had *mechanical* accounts of the living functions, and a chemical pathology of the fluids. The influences of *magnetifm*, *electricity*, and of the heavenly bodies, have been in turn reforted to, in order to account for the changes which take place in living fyftems. Thus men have amufed themfelves with the creatures of their own imagination, whilft the actual cure of difeafes has been ftanding ftill, or in many inftances retrograde; for errors

in

in theory invariably tend to unavailing, if not to miſchievous, practice. This might be eaſily proved by an examination of the modes of treatment recommended by ſyſtematic writers of all ages.

Of the ſciences that have a relation to medicine, *Chemiſtry* has of late been moſt ſucceſsfully cultivated, and, as might have been foreſeen, applied very extenſively, both to the explanation of the animal functions, and the theory and treatment of diſeaſes. In this reſpect, the chemical pathologiſts of the preſent day have nearly trodden the ſteps of their predeceſſors of the laſt and preceding centuries. They talk leſs, indeed, of *acid* or *alkali* prevailing in the maſs of fluids; but have at beſt advanced but one link further in the chain, in recurring to the ſuppoſed *elements* of thoſe bodies, *oxygene*, *azote*, &c., as the ſource of the changes ſyſtems undergo in diſeaſe.

In the application which has been thus made, Chemiſtry probably has gone far beyond her legitimate bounds. She has, unqueſtionably, illuſtrated ſome of the moſt important of the vital functions, and has augmented and improved our means of influencing the living actions; but the explanation that has been drawn from this ſource of the morbid changes they undergo is far from ſatisfying the cautious inveſtigator of Nature, and has ſerved to remove no part of that uncertainty which has been the reproach of medical ſcience in all ages. To be convinced of this, it is ſufficient to advert to the contradictory ſentiments that prevail among theoriſts of the preſent day. With one ſet of phyſicians, and in one quarter of the world, de-

 ficiency

ficiency of the oxygenous principle in the ſyſtem has been the ſuppoſed grand ſource of diſeaſe, and acids, and other ſubſtances capable of imparting oxygene, extenſively preſcribed. With another, *acidity* is the predominating influence that deſolates the habitations of men, and alkalies are reſorted to, as alone capable of arreſting the dire *chimæra.* While ſentiments ſo oppoſite are entertained, relative to the very ſame claſſes of diſeaſe, the cautious practitioner will admit, perhaps with ſome reſerve, the facts of both parties, but will reject the hypotheſis of each, as inadequate to the explanation of the natural phenomena.

But however little this diſcordance of opinion may influence the wary obſerver of Nature, it aſſumes infinite importance in one point of view; we mean, as far as regards the ſubject of Contagion. This, which, in the old world, has been the object of ſo much dread, and given riſe to ſo many, apparently at leaſt, effectual eſtabliſhments for its deſtruction, has, in the new, had its exiſtence queſtioned, or its limits ſo narrowed, as to be confined to the few ſpecific diſeaſes of *ſmall pox*, *meaſles*, *ſyphilis*, and the like. *Dyſentery*, *typhus*, *yellow fever*, and even *peſtilence*, have been withdrawn from its dominion, and painted to us as devoid of the terrors that heretofore have filled their train. To this cauſe is to be attributed, in the opinion of very intelligent obſervers,* no ſmall ſhare of that mortality which has taken place in the new world, and ſeemingly bid defi-

* See *Haygarth's* letter to *Percival* on the ſubject of the American peſtilence, reviewed page 236 of the preſent volume.

ance

ance to the efforts of art to avert it. There is but too much reaſon to fear, that the ſpeculations of practitioners have influenced the adminiſtrative powers to neglect the moſt powerful and certain means of deſtroying contagion, if it really exiſted, means which have at leaſt the merit of being innocent, if the alarm were proved to be groundleſs.

Pneumatic Medicine and the adminiſtration of the *Acids*, which, at one period, promiſed ſo materially to benefit the healing art, have of late ſunk almoſt into oblivion; but certainly without having had their merits ſufficiently inveſtigated. We are ſtill ignorant not only of their mode of acting, but in great meaſure even of their medicinal powers: a long and cautious train of experiment is wanting to enable us to aſcertain their proper ſtation in the materia medica.

Were, however, all other novelties forgotten, the happy introduction of the *Vaccine Inoculation* would be alone ſufficient to ſtamp the preſent, as the age of medical improvement. This practice, which, from year to year, acquires freſh celebrity, appears now too firmly eſtabliſhed to dread the attacks of miſtaken zeal or prejudice. The benefits have been too widely felt to be again abandoned; and we may look forward, without danger of incurring the charge of enthuſiaſim, to the extinction of a moſt loathſome and fatal malady. It will no doubt afford matter of ſatisfaction to every liberal mind, that the chief inſtigator of the practice is about to meet a juſt and well

merited reward from his own country, as he has gained the ſuffrages of ſurrounding nations.

But although the merit of introducing into general practice the vaccine inoculation is unqueſtionably due to Dr. *Jenner*, the palm of priority of diſcovery is likely to be diſputed with him; if indeed that can be called *diſcovery* which ſeems to have been traditionary almoſt, in certain diſtricts, though no practical uſe appears to have been made of the fact. A provincial practitioner of no mean reputation has, we underſtand, laid claim to a ſhare of the reward about to be conferred on Dr. *Jenner*, from the circumſtance of his having, in a correſpondence with *Sir George Baker*, more than twenty years ago, ſuggeſted the very practice which now bids fair to immortalize the name of *Jenner*. We are ignorant whether a want of zeal in the cauſe at that time prevented the adoption of ſo valuable a propoſal, or whether any experiment of inoculation with vaccine matter had actually been made: but the ſuggeſtion appears to have been loſt to all uſeful purpoſes.

Of ſubjects calculated to intereſt the natural philoſopher, *Galvaniſm* is certainly one of the moſt ſtriking and important, as it has, in its inveſtigation, given birth to experiments that moſt materially influence the prevailing doctrines in chemiſtry. The firſt galvanic phenomena conſiſted in the excitement of muſcular contractions by the contact of a metallic arc; this effect was regarded by *Galvani*, and many other philoſophers, as produced by a peculiar ſpecies of elec-

tricity

tricity inherent in the bodies of animals, and to which the name of *animal electricity* was given. The influence thus obſerved was ſoon identified, in the minds of ſanguine ſpeculatiſts, with the nervous power, and theories were framed in order to explain its ſecretion in the brain, and its general diffuſion through the body by means of the nervous ſyſtem. It was ſoon, however, ſhewn by M. *Volta* that the animal arc introduced in the experiment ſerved merely to receive and to manifeſt the influence, but little if at all to produce it. The muſcular irritation, which was at firſt conſidered as the important part of the phenomenon, appeared to be nothing more than an effect of the electric action, produced by the contact of different metals.

As ſoon as it was proved that the galvanic influence was one and the ſame with the electric, differing from it only in its mode of excitement, the ſubject immediately loſt a great part of its intereſt in regard to the animal œconomy, and came to be conſidered in the light of an agent only; powerful, indeed, and capable of effecting important, and probably uſeful, changes in the living actions, but throwing no light on the inſcrutable nature of the nervous or living power. As a medicinal agent, the galvanic electricity will, perhaps, form a valuable addition to the materia medica: at the ſame time that, by the beautiful contrivance of *Volta*, the galvanic pile, it can be made to equal in power the moſt powerful electrical machine, its action has the advantage of being rendered permanent at will, and is ſaid to have been adminiſtered with ſucceſs in certain paralytic affections.

In the department of *Phyſiology*, inveſtigation has been ſucceſsfully purſued. The mechaniſm of the eye has been examined minutely, both by Mr. *Home* and Dr. *Young*, who have aſcertained, in a great meaſure, the means by which that organ adapts itſelf to the perception of objects at different diſtances. From the obſervations of the latter gentleman, it appears moſt probable that this effect is to be attributed to a change of figure taking place in the cryſtalline lens itſelf; the conſequence, perhaps, of a muſcular power. Its laminated and fibrous appearance renders it probable that a muſcular ſtructure accompanies it; whilſt, at the ſame time, it is found that, in thoſe perſons from whom the lens is taken, as in the extraction of the cataract, the faculty of accommodating the eye to different diſtances is in great meaſure loſt.

The Experiments of Mr. *Home* on Nerves, made with the view of determining their irritability, are highly curious and intereſting. Many of his facts concur to render it probable, that nerves poſſeſs a contractile power within themſelves, and are not merely, as commonly ſuppoſed, a ſimple medium of communication between the brain and the ſenſible and moving parts of the ſyſtem. To this head belongs, likewiſe, the elegant work of Profeſſor *Soemmering*, *Tabula Baſeos Encephali*. In this is depicted, with his uſual accuracy, the external form and ſtructure of the moſt important organ in the body, and occaſion given for a number of intereſting remarks on the part it performs in the animal œconomy. The obſervations, too, of M. *Richerand*, reſpecting the *Great Sympathetic Nerve*,

Nerve, and the peculiar purpoſes he ſuppoſes it to ſerve in the ſyſtem, merit notice.

The *Phyſiology of Vegetables* has excited the attention of philoſophers in no ſmall degree. The agency of *Light* and *Heat* on this claſs of beings has been inveſtigated with ſucceſs; and the analogy they bear to animals ſhewn in a number of ſtriking circumſtances; particularly with regard to their ſleep, and ſuſpenſion of action. The examination of the living principle, in this way, in the different claſſes of animated beings, cannot fail to make us better acquainted with its laws of acting, and at length to contribute to important practical uſes.

Practical Medicine has been enriched with many valuable obſervations. The favourable effects apparently produced on the general health by the vaccine inoculation deſerve attention. If the facts preſented to us on this ſubject be well founded, the advantages of its introduction among us will be very conſiderably enhanced. The good effects of a well regulated temperature in certain caſes of pulmonary conſumption are very ſtrikingly exemplified in Dr. *Beddoes's Eſſay* on that ſubject: the benefit aſcribed to the *muriate of lime*, by the ſame author, in ſcrophulous affections, is of conſiderable importance, though other practitioners have failed in their imitation of this practice. The continuation of Dr. *Wilſon's Treatiſe on Febrile Diſeaſes*, and of Dr. *Willan*'s very intereſting work on

on *Cutaneous Diſeaſes,* will be received very gratefully by the profeſſion at large.

By the late expedition to the coaſts of *Egypt,* opportunities have been afforded for inveſtigating the nature and treatment of the diſorders peculiar to that part of the world. The nature of the *Plague,* that deſolator of the human race, has received ſome illuſtration, and it has in a number of inſtances been forced to yield to the bold and perſevering efforts of European practitioners. Much of the ravages it has heretofore committed may, no doubt, be attributed to the ignorance, but much more to the bigotry and prejudices, of the inhabitants of that region, whoſe predeſtinarian notions lead them to be little ſolicitous about either its prevention, or artificial cure.

Under the head of *Surgery,* ſome important improvements will be found to have taken place. The *Principles of Surgery* have perhaps never been more forcibly inculcated, or the moſt intereſting points of his duty more ſucceſsfully preſſed on the attention of the ſtudent, than in Mr. *John Bell's* late extenſive work in this department. In this reſpect he is very ably ſeconded by the ingenious *Syſtem of Diſſections* of his brother, Mr. *Charles Bell.* Exhibited in this manner, and in its immediate relation to chirurgical practice, *anatomy* becomes diveſted of the dry and diſguſting garb it is apt to wear in its detached ſtate, and which too often deters the firſt approaches of the pupil.

Whether

Whether the method of extracting the opaque cryftalline behind the iris, through the fclerotic coat, as recommended by *Sir James Earle*, in his late pamphlet on the fubject, poffeffes any decided advantage over the ufual modes of operating, muft be determined by future trials. It may be proper to obferve, however, that, it has lefs of novelty than the author feems to imagine; for it was many years ago recommended by Dr. *Butter*, and was taught and demonftrated on the dead fubject, by a diftinguifhed teacher of anatomy of that time.

The advantage to be derived, in certain cafes of Deafnefs, from puncturing the *Membrana Tympani* of the Ear, as fuggefted by the late Mr. *Chefelden*, is no longer problematical. The oppofition which this gentleman encountered from popular prejudice, and which was fufficient to deter him from any actual experiment on the human fubject, has been of late happily overcome by Mr. *Aftley Cooper*, who has furnifhed us with repeated inftances of its fuccefsful performance.

Amongft the happieft exertions of the induftry and talents of the prefent day, may be reckoned the cultivation of the *Veterinary Art*. This is a fubject of great intereft, both in regard to the animals that are its immediate object, and which demand the moft humane attention from mankind, and from the relation it bears to the phyfiology and pathology of the human frame. Science and fkill cannot be better employed than in the profecution of fo important a fubject.

INDEX.

INDEX.

Comparetti,

Herſchell,

Obf.

Tartar,

FINIS.

Knight and Compton, Printers,
Middle Street, Cloth Fair.

GENERAL INDEX

TO THE

AUTHORS AND TREATISES

REVIEWED

IN THE

SEVEN FIRST VOLUMES

OF THE

MEDICAL and CHIRURGICAL REVIEW.

Blizard's,

De Guyton's,

Haighton,

Marcard

Richter's

Turnbull's,

END OF INDEX.